

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 27,5 b1
1. Edition

En

PE12P100 A 920/5 RS 90 RSUV 300-600 P8/322 R
Komb.-Nr. 0 401 870 039
1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75)
Note VDT-I-401/ 103

supersedes -
company KHD
engine F12M716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 68	600	16,0	without auxiliary spring			ca. 34	300	8,0	580	0
	620	10,4					60	19-21	350	0
	635	6,0					300	7,7-8,3	320	1,2-1,8
2a	620	9,0-10,6	with auxiliary spring				320	4,5-6,3		
	650	2,0-4,8					360	0 - 1,0		
	690	0-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min	cm ³ /1000 strokes	3		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
Take	from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

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A1

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 27,5 b
2. Edition

En

PE12 P 100/920/5 RS 90 RSUV 300-600 P8/322 R
Komb.-Nr. 0 401 870 023

1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75°)
Note VDT-I-401/ 103

supersedes 6.70
KHD
company
engine F12 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 68	600	16,0	without auxiliary spring			ca 34	300	8,0	580	0
	620	10,4					60	19-21	350	0
	635	6,0					300	7,7-8,3	320	1,2-1,8
	620	9,0-10,6	with auxiliary spring				320	4,5-6,3		
	650	2,0-4,8					360	0 - 1,0		
	690	0-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Take	from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 27,5 c

1. Edition

En

PE12P100/920/5 RS 90 RSUV 300-750P9/322 R

Kont.-Nr. 0 401 870 024

1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75°)

Note VDT-I-401/ 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes
company KHD
engine F12 M716

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control-lever deflection in degrees rev/min 7 8 9			3 Torque control Control rod travel rev/min mm 10 11	
ca. 68	750	16,0				ca. 31	300	8,0	730	0
	770	12,5	without auxiliary spring				50	19-21	450	0
	800	6,2					300	7,7-8,3	340	1,2-1,8
	785	7,4-10,4	with auxiliary spring				350	1,4-4,2		
2a	800	4,8-7,8					400	0 - 1,0		
	820	1,8-4,8								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to 1 rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel rev/min mm 8 9	
Take	from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 27,5 cl
1. Edition

40

En

PET2 P100 A 920/5 RS 90 RSUV 300-750 P9/322 R

Komb.-Nr. 0 401 870 034

1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75°)

Note VDT-I-401/ 103

supersedes

company KHD

engine F12M716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 68	750 770 800	16,0 12,5 6,2	without auxiliary spring			ca. 31	300	8,0	730	0
	785 800 820	7,4-10,4 4,8-7,8 1,8-4,8					50 300 350 400	19-21 7,7-8,3 1,4-4,2 0 - 1,0	450 340	0 1,2-1,8
2a			with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to)				Idle			
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Take	from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 27,5 e
1. Edition

En

PE12P110/920/5 RS 90 RSUV 300-750P9/322 R
1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75°)
Values only apply to test nozzle-and-holder
assembly 0 681 443 022 and fuel-injection test
tubing 1 680 750 060 Note VDT-I-401/ 103

supersedes
company KHD
engine BF12 M 716
Comb.-Nr. 0 401 870 026

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	12,0	18,8-19,6	0,8			
600	6,0	3,4-4,4				
600	12,0	18,2-19,5				
600	15,0	26,7-28,4				
200	6,0	0,9-1,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control lever deflection in degrees rev/min Control rod travel mm 7 8 9			3 Torque control Control rod travel rev/min mm 10 11	
ca.68	750	16,0	without auxiliary spring			ca.31	300	8,0	730	0
	770	12,5					50	19-21	400	0
	800	6,2					300	7,7-8,3	320	1,2-1,8
	800	7,4-10,4					350	1,4-4,2		
2a	800	4,8-7,8	with auxiliary spring				400	0 -1,0		
	820	1,8-4,8								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop Test oil temp 40 °C (104 °F) rev/min 1		6 Rotational speed limit Note changed to 1 rev/min 3		3a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery 5 Idle rev/min cm ³ /1000 strokes 6 7		4a Idle stop Control rod travel rev/min mm 8 9	
Take	from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil ISO 4113

A5

A5

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 27,5 d

1. Edition

En

PET2F100/920/5 RS 90 RSUV 300-1000 P0/323 R
Komb.-Nr. 0 401 870 025
1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75)

supersedes -
company KHD
engine F12M716

Note VDT-I-401/ 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 mm (from BDC)
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 56	1000 1030 1055	16,0 10,8 6,0	without auxiliary spring			ca. 18	300	8,0	980	0
②a	1030 1055 1200	10,0-12,0 3,8-6,0 0 - 1,0					50 300 350 500	19-21 7,7-8,3 4,4-6,0 0 - 1,0	430 340	0 1,2-1,8

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
Take from VDT-I-401/ 103						-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 27,5 d1
1. Edition

En

PE12P 100 A 920/5 RS 90 RSUV 300-1000 P0/323 R
Komb.-Nr. 0 401 870 035
1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75°)
Note VDT-I-401/ 103

supersedes
company KHD
engine F12M716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 56	1000 1030 1055	16,0 10,8 6,0	without auxiliary spring			ca. 18	300	8,0	980	0
							50 300 350 500	19-21 7,7-8,3 4,4-6,0 0 -1,0	430 340	0 1,2-1,8
②a	1030 1055 1200	10,0-12,0 3,8-6,0 0- 1,0	with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle ⑤		④a Idle stop	
Test oil temp 40° C (104 F)		Note changed to rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Take	from VDT-I-401/103								

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 27,5 f
1. Edition

En

PE12P100/920/5 RS 90 RSU 300/1000 PO/331 R

omb.-Nr. 0 401 870 028

1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75°)

Note VDT-I-401/103

supersedes

company KHD

engine FR M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 68	1000	15,8-16,2	-	-	-	ca. 34	300	7,3	980	0
	1050	8,8-10,2					100	19-21	500	0
	1100	3,4-5,2					200	10,0-15,0	300	1,7-2,3
							300	7,0-7,6		
	1150	0,9-3,0					350	4,0-5,4		
②a	1200	0 - 2,0					450	0 - 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
Take	from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

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Test Specifications Fuel Injection Pumps **(1A)** and Governors

40

WPP 001/4 KHD 27,5 fl
1. Edition

En

PE12F100A 920/5 RS 90 RSU 300/1000 PO/331 R
Komb.-Nr. 0 401 870 036
1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75°)
Note VDT-I-401/ 103

supersedes -
company KHD
engine F12M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 68	1000	15,8-16,2	-	-	-	ca. 34	300	7,3	980	0
	1050	8,8-10,2					100	19-21	500	0
	1100	3,4-5,2					200	10,0-15,0	300	1,7-2,3
							300	7,0-7,6		
							350	4,0-5,4		
							450	0-1,0		
(2a)	1150	0,9-3,0								
	1200	0 -2,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop		(6) Rotational speed limit		(3a) Fuel delivery characteristics		Starting fuel delivery (5)		(4a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
Take	from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.8.

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Test Specifications Fuel Injection Pumps (1A) and Governors

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WPP 001/4 KHD 9,2 b

1. Edition

En

PE 4 P 100/420 LS 99

RSV 250-1000 P 7/304 R

Komb.-Nr. 0 401 874 022

supersedes

company KHD

engine F 4 M 716

Note VDT-I-401/ 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,0-2,1}{(1,95-2,15)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
500	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
	2	3	4	5	6		8	9	10	11
ca. 68	1000	16,0	without auxiliary spring			ca. 28	300	6,0	980	0
	1050	9,0					450	0		
	1080	4,0					340	1,2-1,8		
②a	1050	7,0-10,0	with auxiliary spring				100	19-21		
	1100	1,5-3,8					300	5,7-6,3		
	1180	0-1,0					350	3,2-4,5		
						450	0-1,0			

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 9,2 b 1

1. Edition

En

PE 4 P 100 A 420 LS 99

RSV 250-1000 P 7/304 R

Komb.-Nr. 0 401 874 023

Note VDT-I-401/ 103

supersedes

company KHD

engine F 4 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1
(1,95-2,15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,7				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 68	1000	16,0	without auxiliary spring			ca. 28	300	6,0	980	0
	1050	9,0							450	0
	1080	4,0					100	19-21	340	1,2-1,8
	1050	7,0-10,0	with auxiliary spring				300	5,7-6,3		
	1100	1,5-3,8					350	3,2-4,5		
	1180	0-1,0					450	0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Take	from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

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A11

AAA

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 9,2 a

1. Edition

En

PE 4 P 100/420 LS 99

RSV 250-1000 P 7/312 R

Komb.-Nr. 0 401 874 021

supersedes -

company KHD

engine F 4 M 716

Note VDT-I-401/ 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 68	1000 1050 1080	16,0 9,0 4,0	without auxiliary spring			ca. 28	300	6,0	980 450 340	0 0 1,2-1,8
②a	1050 1100 1180	7,0-10,0 1,5-3,8 0-1,0					100 300 350 450	19-21 5,7-6,3 3,2-4,5 0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle ⑤		④a Idle stop	
Test oil temp 40 C (104 F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
Take	From VDT-I-401/ 103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil ISO 4113

A12

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 18,3 f

1. Edition

En

PE 6 P 100/420 LS 111

RSV 250-1000 P 7/317 R

Komb.-Nr. 0 401 876 061

Note VDT-I-401/ 103

supersedes

company

engine

KHD

F 6 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 68	1000 1050 1080	16,0 9,0 4,0	without auxiliary spring			ca. 28	300	6,0	980	0
							100	19-21	450	0
			with auxiliary spring				300	5,7-6,3	340	1,2-1,8
							350	3,2-4,5		
							450	0-1,0		
2a	1050 1100 1180	7,0-10,0 1,5-3,8 0-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40° C (104° F)		Note changed to) rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Take	from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

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A13

A13

Technical SO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 18,3 f 1

1. Edition

En

PE 6 P 100 A 420 LS 111

RSV 250-1000 P 7/317 R

Komb.-Nr. 0 401 876 139

supersedes

company KHD

engine F 6 M 716

Note VDT-I-401/ 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,0-2,1}{(1,95-2,15)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Control lever deflection in degrees rev/min 8 9			3 Torque control rev/min 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					Control rod travel mm 9			Control rod travel mm 11	
ca. 68	1000 16,0 1050 9,0 1080 4,0		without auxiliary spring			ca. 28 300 6,0 100 19-21 300 5,7-6,3 350 3,2-4,5 450 0-1,0		980 0 450 0 340 1,2-1,8		
2a	1050 7,0-10,0 1100 1,5-3,8 1180 0-1,0		with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop Test oil temp 40 C (104 F) rev/min 1		6 Rotational speed limit Note changed to rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min 8		4a Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7					
Take from VDT-I-401/103						-	-	-	-		

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil ISO 4113

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 KHD 18,3 g

1. Edition

En

PE 6 P 100/420 LS 111 RSV 250-1000 P 7/361 DR

Komb.-Nr. 0 401 876 132

Note VDT-I-401/ 103

supersedes™

company KHD

engine F 6 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,0-2,1}{(1,95-2,15)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (to:que control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 68	1000	16,0	without auxiliary spring			ca. 28	300	6,0	980	0
	1050	9,0							630	0,9-1,1
	1080	4,0					100	19-21	340	0,9-1,1
②a	1050	7,0-10,0	with auxiliary spring				300	5,7-6,3		
	1100	1,5-3,8					350	3,2-4,5		
	1180	0-1,0					450	0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40 C (104 F)		Note changed to 1 rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
Take	from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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A15

A05

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 18,3 g 1

1. Edition

En

PE 6 P 100 A 420 LS 111

RSV 250-1000 P 7/361 DR

Komb.-Nr. 0 401 876 133

superseded

KHD

company

F 6 M 716

engine

Note VDT-I-401/ 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 68	1000 1050 1080	16,0 9,0 4,0	without auxiliary spring			ca. 28	300	6,0	980	0
2a	1050	7,0-10,0				with auxiliary spring	100	19-21	630	0,9-1,1
	1100	1,5-3,8					300	5,7-6,3	340	0,9-1,1
	1180	0-1,0					350	3,2-4,5		
							450	0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
Take	from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

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Testoil-ISO 4113

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 FIA 13,8 a 5
1. Edition

En

PE 6 P 120 A 720 RS 167 RQ 225/1100 PA 703
Komb.-Nr. 0 401 846 496
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes -
company Fiat
engine 8210.02
184 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\overset{2,0 - 2,1}{(1,95 - 2,15)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,1 ± 0,1	17,0 - 17,3	0,5 (0,8)			
225	7,5-7,7	1,7 - 2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6 - 16,4	550	16,0	10,1	1145-1160	225	7,6	100 min. 9,1		1100	11,1-11,2
				4,0	1185-1215			225 7,5-7,7		550	11,1-11,3
				1350	0,1,0			365-405 = 2,0			

Torque-control travel
on flyweight assembly dimension a =

0

mm

Speed regulation: At

1145 - 1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7
1100	170,0-173,0 (167,0-176,0)	-		-	-	-	-

Checking values in brackets

7.84

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 11,8 b 1
2. Edition

En

PE 6 P 110/720 RS 176 RSV 300-1100 P 1/303 R
Komb.-Nr. 0 401 876 110

superseded 7-78
company Daimler-Benz
engine OM 355
Schmitt Schneefräse

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	12,7+0,1	13,5-13,7	0,4 (0,8)			
300	7,5-7,7	1,2-1,8	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
max.	800	0,3-1,0	-	-	-	ca. 21	300	7,1		
	x = 4,75						300	7,5-7,7		
							495-555	= 2,0		
ca. 56	11,7	1140-1150								
2a	4,0	1235-1255								
	1260	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40 °C (104 °F)		Note changed to 1 rev/min				Idle			
rev/min	cm ³ /1000 strokes	3		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1100	135,0-137,0 (132,0-140,0)	1140-1150*	-	-	-	100	170,0-190,0	0	-

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

BOSCH

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A18

A18

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 11,8 b 2

1. Edition

En

PE 6 P 110/720 RS 176

EP/RSV 350-750 P 4/397 R

supersedes

company

Daimler-Benz

engine

OM 355

Generator

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,8-2,9) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	11,3-12,3	0,4			
600	9,0	4,3-5,5				
600	15,0	15,5-17,2				
200	9,0	2,6-3,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 44	750 800 825	16,0 8,6 4,0	without auxiliary spring			ca. 23	350 200 350 400	6,0 19,0-21,0 5,9-6,1 0 - 1,0		**
ca. 42 (2a)	750 765 840	ca. 11,0 ca. 3,8 0,1-1,0								

The numbers denote the sequence of the tests Set idle -speed auxiliary spring at 2.0 mm control-rod travel then 1/2 turn back.

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
730	135,0-138,0	750-760*	780-800	= 3,8 mm RW	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 STE 8,1 a 1

1. Edition

En

PE 6 P 110 A 721 RS 195 Z

RQV 250-1300 PA 257 DR

Komb.-Nr. 0 401 856 121

supersedes

company Steyr

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke ^{2,8-2,9}
 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	9,8-10,5	0,5			
600	9,0	3,2-4,2				
600	12,0	8,2-9,4				
600	15,0	13,7-15,3				
200	9,0	1,1-2,1				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sieve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1340 1400 1450 1500 1570	14,4-17,2 8,5-13,2 2,9-9,7 0-5,8 0	-	-	-	ca. 13	150 250 350 450 510	10,0-11,0 8,0-10,7 4,6-7,8 0,4-3,4 0	250 600 950 1300	0,1-0,6 3,8-4,1 5,2-5,6 8,0

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5) Control rod travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
LDA 1300	0,6 bar 117,0-119,0 (115,0-121,0)	1330-1350*	LDA 900	0,6 bar 115,0-118,0 (114,0-119,0)	100	120,0-140,0	1300	0
LDA 1300	0 bar 113,0-115,0 (111,0-117,0)		700	114,0-118,0 (113,0-119,0)			1100	0,1-0,2
			500	104,0-110,0 (103,0-111,0)			850	0,4-0,5

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

A20

A20

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D. Adjustment Test for Manifold Pressure Compensator

STE 8,1 a 1

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	diminution difference mm (1)
PE6P..RS195Z + RQV..PA257DR	0,30	0,46	Start End

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8 t

2. Edition

En

Testoil-ISO 4113

 PES 6 P 120 A 820 LS 249 Z
 Komb.-Nr. C 401 046 103

RQV 300-1000 PA 204/4 R

supersedes 81

company Fiat

engine 8217.12.024

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke		2,0-2,1 (1,95-2,15)		mm (from BDC)		
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	10,5+0,1	18,7 - 19,1	0,5(0,9)			
300	5,9-6,1	2,2 - 2,8	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	mm rev/min	4	5	mm rev/min	7	8	mm rev/min	10	11
		①a ②a			④			③		①
max.	1000	15,2-17,8	-	-	-	ca. 14	100	min. 9,0	275	1,5-1,7
ca. 50	9,5 4,0 1300	1040-1050 1135-1165 0 - 1,0				300-395	300	5,9-6,1	450 800 1000	3,6-4,2 6,4-6,6 7,9
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery		Rotational speed		Fuel delivery characteristics		Starting fuel delivery		Torque-control	
Control-rod stop		limitation		high idle speed		idle		travel	
Test oil temp 40°C (104°F)		intermediate speed				switching point			
rev/min	cm ³ /1000 strokes	rev/min	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel
1	2	3	④a	4	5	6	7	8	mm
1000	187,0-191,0 (184,0-194,0)	1040-1050*		-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8 t 1
1. Edition

En

PES 6 P 120 A 820 LS 249-1 RQV 300-750 PA 204
Komb.-Nr. 0 402 046 230

supersedes -

compensat

8 217.32.112

147 kW (200 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1
(1,95 - 2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	9,7-9,8	14,9 - 15,3	0,5 (0,9)			
300	5,9-6,1	1,8 - 2,4	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	800	15,2-17,8	-	-	-	ca.11	100	min.7,5	250	0 - 0,5
ca. 53	8,7 4,0 900	770 - 775 790 - 800 0-1,0				3a	300 645	5,9-6,1	- 630 750	2,4-2,6 5,8

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
700	149,0-153,0 (146,0-155,0)	770 - 775*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

A23

A23

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 10,0 a
1. Edition

En

PE 5 P 100 A 720 RS 265 RQ 250/1100 PA 269R
Komb.-Nr. 9 400 087 240supersedes
company Mercedes-Benz Brasil
engine 0 M 355-51 - 2 - 4 - 5 - 3 je $72^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test oil: SO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75 - 2,95) mm (from BD RW=9,0 - 12,0 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,0±0,1	11,9 - 12,1	0,3 (0,6)			
250	7,4-7,6	1,7- 2,3	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	12,0 4,0 1350	1125-1145 1195-1230 0-1,0	250	6,0	100 250 385	min. 7,5 5,9-6,1 425=2,0	-	-

Torque-control travel
on flyweight assembly dimension a = mm

Speed regulation: At

1125-1145 min - 1
1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever: Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7
1100	113,5-120,5 (116,5-122,5)	450	450	101,0 - 105,0 (99,0 - 107,0)	100	140,0 - 160,0

Checking values in brackets

7.84

A24

A24

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Test Specifications Fuel Injection Pumps (1A) and Governors

40
WPP 001/4 PEN 7,0 b 2
2. Edition

En

PE 6 P 110 A 320 RS 260 W

RSV 250-1250 P0/374-2 R

supersedes 9.83
company Volvo-Penta
engine TAMD 70 E
228 kW

Komb.-Nr. 0 401 876 272

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,1 +0,1	14,1-14,3	0,4(0,75)			
250	6,1-6,3	1,1-1,5	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 20	250	5,7	-	-
	X = 2,0						250	6,1-6,3		
							460-520	= 2,0		
ca. 51	11,1	1290-1300								
2a	4,0	1390-1420								
	510	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational speed limit Note changed to) rev/min		3a Fuel delivery characteristics rev/min		Starting fuel delivery Idle		5		4a Idle stop Control rod travel mm	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min			
1	2	3	4	5	6	7	8	9			
LDA 1000	0,9 bar 141,0-143,0 (138,0-146,0)	1290-1300*	LDA 700	0 bar 85,0-88,0 (82,0-91,0)	100	170,0-210,0 =20,0 - 21,0 mm RW	0 -	-			
					250	11,0-15,0					

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

B1

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D. Adjustment Test for Manifold Pressure Compensator

PEN 7,0 b 2 -2-

Test at n 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure : bar	Gauge pressure = bar	mm (1)
PE6P..RS 260 W +RSV..P0/374-2R	0,90	0 0,59 0,30	12,1-12,2 9,0-9,1 11,3-11,4 9,7-9,9

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 7,0 d 1

1. Edition

En

PE 6 P 110 A 320 RS 272 RQV 250-1250 PA 235-2 R
Komb.-Nr.0 401 846 298

supersedes
company Volvo
engine TD 70 E

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 3,0-3,1 \\ (2,95-3,15) \end{matrix}$ mm (from BDC), RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	8,7-8,8	9,2-9,4	0,4(0,8)			2,5 [±] 0,1
250	6,7-6,9	2,2-2,6	0,3(0,6)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca. 12	100 250 350-410=2,0	min. 8,2 6,7-6,9	200 550 900 250	0,3-0,8 2,6-3,2 4,6-5,0 7,5
ca. 44	7,7 4,0 1450	1290-1300 1340-1370 0-1,0				3a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,7 bar 92,0-94,0 (89,0-97,0)	1290-1300*	LDA 700	0 bar 70,5-73,5 (67,5-76,5)	100	140,0-180,0 (136,0-184,0) =20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

VOL 7,0 d 1

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P.. RS 272 +RQV.. PA 235-2 R	0,70	0 0,31 0,23	8,7-8,8 7,8-7,9 8,5-8,6 7,9-8,1

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 ROL 16,2 b

1. Edition

En

PE 8 P 110 A 920/4 RS 290 RQV 350/575-750 PA 273 R

Komb.-Nr. 0 401 848 044

1-6-2-5-8-3-7-4 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes

company: Rolls Royce

engine: C 8 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,5-2,6$ mm (from BDC) $RW=9,0-12,0$ mm
(2,45-2,65)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	13,7+0,1	17,6-17,9	0,4(0,75)			
350	7,0-7,2	1,8-2,2	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 68	12,7 4,0 950	750-755 790-800 0-1,0	-	-	-	ca. 15	100 350 580-640=2,0	min. 8,5 7,0-7,2	320 400 500 650 750	0,5-1,7 1,9-2,1 4,6-5,2 8,3

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
700	176,0-179,0 (173,5-181,5)	750-755 *	-	-	100	210,0-230,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

B6

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 s

2. Edition

En

PES 6 P 110 A 720 LS 295 RQV 250-1100 PA 373 DR

Komb.-Nr. 0 402 046 170

superseded 0.83

company MAN

engine D 2566 MT

206 kW/2200 min⁻¹

MAN-Nr. 1-7961

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 mm (from BDC) RW = 9,0 - 12,0 mm
(2,95 - 3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,1+0,1	14,5-14,8	0,4(0,8)			
250	6,8-7,0	1,2-1,7	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 13	100	min. 8,5	200	0,6-0,8
ca. 67	11,1	1140-1150					250	6,8-7,0	500	3,9-4,1
	4,0	1280-1310					520-	580=2,0	800	5,5-5,7
	1400	0 - 1,0							1100	8,1

Torque control travel a = 0,7 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 145,0-148,0 (142,5-150,5)	1140-1150*	LDA 500	0,2 bar 123,0-127,0 (120,0-130,0)	100	215,0-235,0 (211,0-239,0)	1100	12,1+0,1
LDA 700	0,7 bar 157,0-161,0 (154,0-164,0)		LDA 500	0 bar 110,0-113,0 (107,0-116,0)			700	12,8+0,1
							850	12,3+0,2

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

B7

87

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D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 s

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
PES 6 P..LS 295 + RQV..PA 373 DR	0,50	0	12,8 - 12,9	
		0,20	10,9 - 11,0	
		0,32	11,5 - 11,6	
			12,2 - 12,4	

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 s 1

2. Edition

En

PES 6 P 110 A 720 LS 295 RQV 250-1100 PA 421 DR

Komb.-Nr. 0 402 046 174

superseded 10.83

company: MAN

 engine: D 2566 MTSF
 206 kW/2200 min⁻¹
 MAN-Nr. 1-7968

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $3,0 - 3,1$
 (2,95-3,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,1+0,1	14,5-14,8	0,4(0,8)			
250	6,9-7,1	1,2-1,7	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1100	15,2-17,8	-	-	-	ca. 16	100 250 520-	min.8,5 6,9-7,1 580=2,0	200 500 800 1100	0,6-0,8 3,9-4,1 5,5-5,7 8,1
ca.68	11,1 4,0 1400	1140-1150 1245-1275 0 - 1,0				③a				

Torque control travel a = 0,7 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min	cm ³ /1000 strokes	rev/min ④a	rev/min	cm ³ /1000 strokes ⑤b	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1100	0,7 bar 145,0-148,0 (142,5-150,5)	1140-1150*	LDA 500	0,2 bar 123,0-127,0 (120,0-130,0)	100	215,0-235,0 (211,0-239,0)	1100	12,1+0,1
LDA 700	0,7 bar 157,0-161,0 (154,0-164,0)		LDA 500	0 bar 110,0-113,0 (107,0-116,0)			700 850	12,8+0,1 12,3+0,2

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

B9

B9

BOSCH

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D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 s 1 -2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure - bar	Gauge pressure - bar	mm (1)	
PES 6 P..LS 295 + RQV..PA 421 DR	0,50	0	12,8 - 12,9	
		0,20	10,9 - 11,0	
		0,32	11,5 - 11,6	
			12,2 - 12,4	

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 1 8

2. Edition

En

PES 6 P 110 A 720 LS 295 RQ 250/1100 PA 422 DR

Komb.-Nr. 0 402 046 173

supersedes 10.83

company: MAN

engine: D 2566 MTSF

206 kW/2200 min⁻¹

MAN-Nr. 1-7963

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0 - 3,1}{(2,95 - 3,15)}$ mm (from BDC) Zyl. 6; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,1+0,1	14,5 - 14,8	0,4(0,8)			
250	6,8-7,0	1,2 - 1,7	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4	Control rod travel mm 5	Test specifications rev/min 6		Control rod travel mm 8	Control rod travel mm 9	Control rod travel mm 10		Control rod travel mm 12	
600 VH = max. 46°	19,2-20,8	600	20,0	11,1 4,0 1350	1145-1160 1200-1230 0 - 1,0	250	6,9	100 250 370-	min.8,5 6,8-7,0 410=2,0	1100 1000 800 700	12,1-12,2 12,3-12,5 12,6-12,8 12,8-12,9

Torque-control travel
on flyweight assembly dimension a =

0,3

mm

Speed regulation: At 1145-1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	Control rod travel
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	cm ³ /-1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3	4	5	6	7
LDA 1100	0,7 bar 145,0-148,0 (142,5-150,5)	-	LDA 500	0,2 bar 123,0-127,0 (120,0-130,0)	100	215,0-235,0 (211,0-239,0)
LDA 700	0,7 bar 157,0-161,0 (154,0-164,0)		LDA 500	0 bar 110,0-113,0 (107,0-116,0)		

Checking values in brackets

7.84

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 1 8 -2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..LS 295 + RQ..PA 422 DR	0,50	0	12,8 - 12,9
		0,20	10,9 - 11,0
		0,32	11,5 - 11,6
			12,2 - 12,4

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 BET 12,0 a 1

1. Edition

En

PE 6 P 110 A 320 RS 350 RSV 300-1100 P 1/815 DR

Komb.-Nr. 0 401 876 210

supersedes
company Berliet
MDS 063540 T
engine 256 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,3-1,4 (1,25-1,45) mm (from BDC) Zyl. 3

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	14,5-14,8	0,4(0,8)			
300	6,8-7,0	0,7-1,5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control lever deflection in degrees 7 rev/min 8			③ Torque control Control rod travel rev/min 10 mm 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					Control rod travel mm 9				
ca. 60	1085 16,0 1140 10,2 1180 5,0		without auxiliary spring			ca. 27 300 6,4		1100	11,7-11,8	
②a	1145 10,7 1200 ca. 4,0 1300 0,3-1,7		with auxiliary spring			100 min. 19,0 300 6,8-7,0 520-580=2,0 600 0-1,0		900 650	12,9-13,1 13,3-13,4	

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full load stop Test oil temp. 40°C (104°F) rev/min 1 cm ³ /1000 strokes 2		⑥ Rotational speed limit Note changed to 1 rev/min 3	③a Fuel delivery characteristics rev/min 4 cm ³ /1000 strokes 5		Starting fuel delivery Idle ⑤ rev/min 6 cm ³ /1000 strokes 7		④a Idle stop rev/min 8 Control rod travel mm 9	
LDA 1100	0,7 bar 145,0-147,5 (142,0-150,5)	1140-1150*	LDA 650	0,7 bar 174,0-179,0 (171,0-182,0)	100	160,0-180,0	300	6,9
LDA 900	0,7 bar 165,0-171,5 (162,0-174,5)		LDA 350	0 bar 109,0-113,0 (106,0-116,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

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7.84

Testoil-ISO 4113

B13

B13

D. Adjustment Test for Manifold Pressure Compensator

BET 12,0 a 1 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P.. RS 350 + RSV.. P1/815 DR	0,68	0,42 0,22 0	13,4-13,5 12,6-12,7 11,6-11,9 11,1-11,2

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 BET 12,0 b

1. Edition

En

PE 6 P 110 A 320 RS 350 RSV 300-1100 P 1/816 DR
Komb.-Nr. 0 401 876 211

supersedes
company Berliet
MDS 063540
engine 206 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,25-1,45) mm (from BDC) RW=9,0-12,0 mm - Zyl. 3

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,7+0,1	16,7-16,9	0,4 (0,75)			
300	6,8-7,0	0,9-1,7	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control lever deflection in degrees rev/min 7 8 9			3 Torque control Control rod travel rev/min mm 10 11	
	Control rod travel mm 2	Control rod travel mm rev/min 3								
loose	800	0,3-1,0 x = 4,5	-	-	-	ca. 24	300	6,4	1100	12,7-12,8
							300	6,8-7,0	1000	12,9-13,1
							480-540	2,0	700	13,5-13,7
ca. 59	11,7	1140-1150								
2a	4,0	1200-1230								
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop Test oil temp 40° C (104° F) rev/min 1		6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 8 9	
	cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		
LDA 1100	0,7 bar 166,5-168,5 (164,0-171,0)	1140-1150*		LDA 650	0,7 bar 180,0-185,0 (177,0-188,0)	100	160,0-180,0 (156,0-184,0)	0 300	6,9
				LDA 350	0 bar 109,0-113,0 (106,5-115,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

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B15

845

D. Adjustment Test for Manifold Pressure Compensator

BET 12,0 b

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P.. RS 350 +RSV.. P1/816 DR	0,70	0 0,38 0,22	13,5-13,7 10,7-10,8 12,8 12,9 11,4-11,7

Notes

(1) when n

rev/min and
gauge pressure

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4MB11, 4b
5. Edition

40

En

Testoil-ISO 4113

PES E P 100 A 820 LS 351Z
..LS 351Y

RQ 300/1100 PA327R (1)
PA327R (2)

supersedes 10.83

company Daimler-Benz
engine OM 407

147kW (200PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,00-3,10} (2,95-3,13) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,8-11,9	10,2 - 10,4	0,3(0,6)	11,7-11,8	9,9 - 10,1	
300	8,0-8,2	0,6 - 1,2	0,3(0,5)	7,5-7,7	0,5 - 1,1	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

327R mit Z

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control					
①		Setting point		Test specifications		④		Setting point		Test specifications		⑤		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm		
1	2	3	4	5	6	7	8	9	10	11	12				
500	13,8-14,6	500	14,2	10,8	1145-1160	300	7,6	100	min.9,6	-	-				
				4,0	1200-1230			300	7,5-7,7						
				13,0	0 - 1,0			370-410	=2,0						

B. Governor Settings

327R withy MB 11,4b

-2-

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
500	13,8-14,6	500	14,2	10,7 4,0 1350	1145-1160 1200-1230 0 - 1,0	300	7,6	100 300 370-	min.9,6 7,5-7,7 410=2,0	-	-

Torque-control travel
on flyweight assembly dimension a -

mm

Speed regulation At 1145-1160 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /- 1000 strokes	rev/min	Control rod travel mm	rev/min	cm ³ /- 1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	Control rod travel mm
"y" 1100	99,0 - 101,0 (97,0 - 103,0)	500	-	-	-	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel
on flyweight assembly dimension a -

mm

Speed regulation At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /- 1000 strokes	rev/min	Control rod travel mm	rev/min	cm ³ /- 1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	Control rod travel mm

En Checking values in brackets

①

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 c 1

2. Edition:

En

PE 6 P 120 A 321 RS 359-1 RQV 275-1200 PA 648
 Komb.-Nr. 0 401 856 154
 Values only apply to test nozzle-and-holder
 assembly 1 688 901 019 and fuel-injection test
 tubing 1 680 750 067

supersedes 10.83
 company: RVI
 engine MID 06 20 30
 141 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,5-3,6}
 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,7+0,1	12,7-12,9	0,5(0,9)			
275	5,6-5,8	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1230	15,2-17,8	-	-	-	ca. 10	200 275	min.8,2 5,6-5,8	275 450 800 1200	1,3-1,4 8,3-3,9 5,7-5,9 8,3
ca. 65	9,7 4,0 1450	1245-1255 1335-1365 0-1,0				275-365				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1200	127,0-129,0 (124,0-132,0)	1245-1255	-	-	100	155,0-175,0 (151,0-179,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 PEN 7,0 k

1. Edition

En

PE 6 P 110 A 320 RS 367 Z
Komb.-Nr. 0 401 846 456

RQV 250-1000 PA 394

supersedes
companion Volvo-Penta
engine MD 70 C-C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,0-3,1$ mm (from BDC) $RW = 9,0-12,0$ mm
(2,95-3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	8,9-9,0	7,0-7,2	0,4(0,75)			2,5 ± 0,1 (2,2-2,9)
250	5,3-5,5	1,6-2,0	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1050	15,2-17,8	-	-	-	ca. 10	100	min.6,8	200	0,7-0,9
ca. 66	7,9	1050-1060					250	5,3-5,5	470	3,2-3,7
	4,0	1110-1130							730	5,2-5,5
	1250	0-1,0							1000	7,9

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥	Torque-control travel ⑤ Control rod travel mm	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8
LDA 900	0,7 bar 70,0-72,0 (67,0-75,0)	1050-1060*	-	-	100	165,0-200,0 (161,0-204,0)	-

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

Test oil ISO 4113

BOSCH

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 STE 10,0 b

7. Edition

En

PE 6 P 110 A 721 RS 369

RQ 300/1300 PA 412 DR

supersedes 7.83

company Steyr

engine WD 615.60

Komb.-Nr. 0 401 856 142

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,75-2,85$
($2,70-2,90$) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	12,5+0,1	11,7-11,9	0,4(0,75)			
250	9,0-9,2	1,8-2,4	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation ④				Idle speed regulation ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	11,5 4,0 1550	1345-1360 1405-1435 0 - 1,0	300	6,0	100 300 390-430 = 2,0	min. 7,4 5,9-6,1	1300 700 900 1100	12,5-12,6 12,8-12,9 12,6-12,8 12,6-12,7

Torque-control travel on flyweight assembly dimension a = 0,2 mm Speed regulation: At 1345-1360 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7
LDA 1300	0,7 bar 117,0-119,0 (114,0-122,0)	-	LDA 700	0,7 bar 107,0-111,0 (104,0-114,0)	100	115,0-135,0
			LDA	0 bar 100,0-102,0 (97,0-105,0)		

Checking values in brackets

5.84

Testoil-ISO 4113

B21

B2A

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D. Adjustment Test for Manifold Pressure Compensator

STE 10,0 b

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
PE 6P.. RS 369 +RQ .. PA 412 DR	0,70	0 0,31 0,27	12,8-12,9 12,5-12,6 12,7-12,8 12,6-12,7	

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 STE 10,0 b 1

1. Edition

En

PE 6 P 110 A 721 RS 369

RQV 250-1300 PA 413 DR

Komb.-Nr. 0 401 856 143

supersedes -

company Steyr

engine WDWD 615,60

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$ mm (from BDC) RW = 9,0-12,0 mm
(2,75-2,95)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	12,6+0,1	11,5-11,7	0,4(0,75)			
250	9,3-9,5	1,8-2,4	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1300	15,2-17,8	-	-	-	ca. 15	100	min 10,5	200	0,6-0,8
ca. 47	11,6 4,0 1550	1340-1350 1450-1480 0 - 10					250 420-480= 2,0	9,3-9,5	560 930 1300	3,4-4,1 5,6-6,0 8,3

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) rev/min 1		Rotational-speed limitation intermediate speed rev/min 3		Fuel delivery characteristics high idle speed rev/min 4		Starting fuel delivery idle switching point rev/min 6		Torque-control travel rev/min 8		Control rod travel mm 9
LDA 1300	0,7 bar 115,0-117,0 (112,0-120,0)	1340-1350*		LDA 700	0,7 bar 108,0-111,0 (105,0-114,0)	100	120,0-130,0	1300 700 1000 1150	12,6+0,1 13,0+0,1 12,9+0,1 12,7+0,1	
				LDA 700	0 bar 102,0-104,0 (99,0-107,0)					

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

B23

B23

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D. Adjustment Test for Manifold Pressure Compensator

STE 10,0 b 1 - 2 -

Test at n 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure bar	Gauge pressure bar	mm (1)	
PE6P..RS 369 +RQV .. PA 413 DR	0,70	0	13,0-13,1	
		0,35	12,7-12,8	
		0,33	12,9-13,0	
			12,8-12,9	

Notes

(1) when n

rev/min and
gauge pressure -

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 11,8 i

4. Edition

En

Testoil-ISO 4113

PE 6 P 110 A 720 RS 371 RQV 300-1100 PA 568
Komb.-Nr. 0 401 846 450
1 - 5 - 3 - 6 - 2 - 4
0 - 60 - 120 - 180 - 240 - 300 $\pm 0,5^{\circ}$ ($\pm 0,75^{\circ}$)

supersedes 2.82

company Daimler Benz

engine OM 355 A

206 kW (280 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) mm (from BDC)
2,80-2,90

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	16,0 - 16,2	0,4(0,8)			
300	6,1-6,3	1,3 - 1,9	0,4(0,7)			
600 500	---	C, Sp. 4 u.5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1100	15,2-17,8	-	-	-	ca. 16	100 300	min. 8,0 6,2-6,4	250 540 820 1100	1,0-2,0 4,4-4,6 5,9-6,2 8,4
ca. 66	10,7 4,0 1350	1140-1150 1215-1245 0 - 1,5				275-330 3a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b		Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	④a	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 160,0-162,0 (157,0-165,0)	1140-1150*		LDA 600	0,7 bar 155,0-159,0 (152,0-162,0)	100	140,0-160,0 (136,0-164,0)	-	-
				LDA 500	0 bar 134,0-136,0 (131,0-139,0)	100-220 (80-240)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

C1

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D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

MB 11.8i

Testoil-ISO 4113

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1)
371 with 568	0,7 bar	0,39 0,35 0	11,7 - 11,8 11,5 - 11,6 11,2 - 11,3 11,0 - 11,1

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 i
5. Edition

En

PE 6 P 110 A 320 RS 372

RSV 250-1100 P 5/458 R

Komb.-Nr. 0 401 876 235

superseded 10.82
company DAF
engine DKTD 1160

Note VDT-I-420/114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,8-2,9} (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,0+0,1	13,6-13,9	0,4 (0,75)			
250	6,6-6,8	0,7-1,2	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	250	6,2	400	12,2-12,3
	x = 3,5						250	6,6-6,8	300	12,4-12,9
ca. 51	11,0	1140-1150					640-700	= 2,0		
2a	4,0	1275-1305								
	1425	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 850	0,7 bar 135,5-138,5 (133,0-141,0)	1140-1150 *	LDA 600	0 bar 126,0-129,0 (123,5-131,5)	100	244,0-285 (240,0-289,0) = 19,5 - 21,0 mm RW	0 250	6,7	

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

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Testbench ISO 4113

C3

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 i

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P.. RS 372 + RSV.. P5/458 R	0,70	0 0,30 0,26	12,0-12,1 11,4-11,5 11,8-11,9 11,5-11,7

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 11,6 k

5. Edition

En

PE 6 P 120 A 320 RS 372 RSV 250-1100 P5/458R

Komb.-Nr. 0 401 876 229

Note VDT-I-420/114

supersedes 10.82

company: DAF

engine: DKS 1160

235 kW (320 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8 - 2,9}{(2,75 - 2,95)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	10,9+0,1	19,1 - 19,5	0,5 (0,9)			
250	6,2-6,4	1,1 - 1,5	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca. 24	250	5,8	400	11,1+0,1
	x =	5,0					250	6,2-6,4	300	11,3+0,5
							620-680 = 2,0			
⑤ ca. 54	9,9	1140-1150								
	4,0	1260-1290								
	1425	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat. Note: changed to ... rev/min 3	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F) rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 191,0-195,0 (188,0-198,0)	1140-1150*	LDA 600	0 bar 135,0-137,0 (132,0-140,0)	100	315,0-355,0 (311,0-359,0) = 19,5 - 21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.84

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 k -2-

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Testoil-ISO 4113

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE6P120..RS 372 with.. P5/458R	0,36	0,70 0 0,28	10,6 - 10,7 10,9 - 11,0 9,8 - 9,9 10,0 - 10,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

PE 6 P 120 A 320 RS 372-1 RQ 250/1100 PA 417 R
Komb.-Nr. 0 401 846 464

supersedes

company: DAF

engine: DKS 1160
235 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,8-2,9}
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	10,9+0,1	19,3-19,7	0,5(0,9)			
250	6,2-6,4	1,1-1,5	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider VRG check ①		Full-load speed regulation Setting point ④				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	9,9 4,0 1350	1145-1160 1210-1240 0-1,0	250	6,3	100 250 445-485 = 2,0	min.7,4 6,2-6,4	850 1100	10,9-11,0 10,8-11,0

Torque-control travel on flyweight assembly dimension a = 0 mm Speed regulation: At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7
LDA 850	0,7 bar 193,0-197,0 (190,0-200,0)	-	LDA 600	0 bar 133,5-137,5 (130,5-140,5)	100	320,0-360,0 (316,0-364,0) = 19,5-21,0 mm RW

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 i 9

-2-

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 372-1 + RQ..PA 417 R	0,70	0 0,30 0,26	10,9-11,0 9,8-9,9 10,6-10,7 10,0-10,4

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

PE 6 P 110 A 320 RS 372-1

RQ 250/1100 PA 417-1

Komb.-Nr. 0 401 846 463

RQ 250/1100 PA 417

supersedes 3.83

company: DAF

engine: DKTD 1160
191 kW (260 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,0+0,1	13,7-14,0	0,4(0,75)			
250	6,6-6,8	0,7-1,1	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	11,0 4,0 1350	1145-1160 1220-1250 0 - 1,0	250	6,7	100 250 460-500 = 2,0	min. 7,8 6,6-6,8	850 100	12,0-12,1 11,9-12,1

Torque-control travel
on flyweight assembly dimension a = 0 mmSpeed regulation: At 1145-1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7
LDA 850	0,7 bar 136,5-139,5 (134,0-142,0)	-	LDA 600	0 bar 127,5-130,5 (125,0-133,0)	100	245,0-285,0 (241,0-289,0) = 19,5-21,0 mm RW

Checking values in brackets

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 i 8

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Testoil-ISO 4113

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1)
PE 6 P..RS372-1 +...PA17-1 / ...PA 417	0,70	0 0,30 0,26	12,0 - 12,1 11,4 - 11,5 11,8 - 11,9 11,5 - 11,7

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

En

PE6P120A 320 RS 372-1 RQ 250/1000 PA 417-3

Komb-Nr. 0 401 846 503

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes -
company: DAF
engine: DKSB
215 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$
($2,75-2,95$) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,2+0,1	17,9-18,1	0,5(0,9)			
250	6,6-6,8	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9 rev/min 10		Torque control rev/min 11		Control rod travel mm 12
700	15,6-16,4	700	16,0	10,2 4,0 1250	1035-1050 1095-1125 0-1,0	250	6,3	100 250 445-485=2,0	min.7,4 6,2-6,4	850 1000	11,4-11,5 11,3-11,5	

Torque-control travel
on flyweight assembly dimension a =

0

mm

Speed regulation: At 1035-1050 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6		Control rod travel mm 7
LDA 850	0,7 bar 179,0-181,0 (176,0-184,0)	-		LDA 600	0 bar 135,5-137,5 (132,5-140,5)	100 250	305,0-345,0 (301,0-349,0)	
							6,2-6,4 mm RW	

Checking values in brackets

7.84

Test oil ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6k5 -2-

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P..RS 372-1 +RQ..PA 417-3	0,70	0 0,33 0,27 :	11,2-11,3 10,0-10,1 10,9-11,0 10,2-10,4

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 DAF 11,6k3

3. Edition

En

PE 6 P 110 A 320 RS 372-1 RSV 250-1100 P5/458 R
Komb.-Nr. 0 401 876 254 P5/458-1

supersedes 7.83
company DAF
engine DKTD 1160
191 kW (260 PS)

Note VDT-I-420/114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,0+0,1	13,7 - 14,0	0,4 (0,75)			
250	6,6-6,8	0,7 - 1,2	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Control lever deflection in degrees rev/min 7 8 9			3 Torque control rev/min Control rod travel 10 11	
loose	Control rod travel mm	Control rod travel mm rev/min								
	800	0,3-1,0 x = 4,25	-	-	-	ca. 21	250	6,2	400	12,2+0,1
ca. 51	11,0	1140-1150					250	6,6-6,8	300	12,4+0,5
2a	4,0	1275-1305					640-700	= 2,0		
	1425	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to rev/min 3		3a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm ³ /1000 strokes 6 7		4a Idle stop rev/min Control rod travel mm 8 9	
LDA 850	0,7 bar 137,0-140,0 (134,5-142,5)	1140-1150*		LDA 600	0 bar 127,5-130,5 (124,5-133,5)	100	245,0-285,0 (241,0-289,0) = 19,5 - 21,0 mm RW	0 250	6,7

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

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C13

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 k 3

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 372-1 + .. P5/458 / .. P5/458-1	0,30	0,70 0 0,26	11,8 - 11,9 12,0 - 12,1 11,4 - 11,5 11,5 - 11,7

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 k 4
2. Edition

En

PE 6 P 120 A 320 RS 372-1 RSV 250-1100 P5/458 R

Komb.-Nr. 0 401 876 255

Note VDT-I-420/114

supersedes 11.82
company DAF
engine DKS 1160
235 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	10,9+0,1	19,3-19,7	0,5 (0,9)			
250	6,2-6,4	1,1-1,5	0,65 (0,95)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	250	5,8	400	11,1+0,1
	X = 5,0						250	6,2-6,4	300	11,3+0,5
							620-680	= 2,0		
ca. 54	9,9	1140-1150								
2a	4,0	1260-1290								
	1425	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40° C (104° F)		Note changed to 1 rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 850	0,7 bar 193,0-197,0 (190,0-200,0)	1140-1150*	LDA 600	0 bar 133,5-137,5 (130,0-141,0)	100	320,0-360,0 (316,0-364,0) = 19,5 - 21,0 mm RW	0 250	6,3	

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

BOSCH

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C15

C15

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 k 4

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P..RS372-1 + ..P5/458R	0,36		10,6 - 10,7
		0,70	10,9 - 11,0
		0	9,8 - 9,9
		0,28	10,0 - 10,4

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 k 2

4. Edition

En

PE 6 P 120 A 320 RS 372-1 Y RSV 250-1100 P5/458 R

Note VDT-I-420/114

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 2.84

company DAF

engine DKX 1160

243 kW

Komb.-Nr. 0 401 876 261

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,4+0,1	18,3-18,6	0,5 (0,9)			
250	6,4-6,6	1,1-1,5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Control lever deflection in degrees		Lower rated speed		3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	7	8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	250	6,0	400	11,6-11,7	
	x = 5,0						250	6,4-6,6	300	11,8-12,3	
							670-730	= 2,0			
ca. 54	10,4	1140-1150									
2a	4,0	1270-1300									
	1425	0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 850	0,7 bar 183,0-186,0 (180,0-189,0)	1140-1150*	LDA 600	0 bar 135,0-138,0 (132,0-141,0)	100	315,0-355,0 (311,0-359,0) = 19,5-21,0 mm Rk	250	6,5	

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

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C17

C17

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 k 2

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 372-1y + ..P5/458 R	0,37	0,70 0 0,30	11,0-11,1 11,4-11,5 10,0-10,1 10,3-10,7

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 q 1

4. Edition

En

PES 6 P 110 A 720 LS 375 RQV 250-1100 PA 373 DR

Komb.-Nr. 0 402 046 180

supersedes 10.83

company: MAN

engine: D 2566 MTF
206 kW (280 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,0 - 3,1$
(2,95-3,15) mm (from BDC) Zyl. 6; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,4+0,1	14,6-14,9	0,4(0,75)			
250	7,3-7,5	1,0-1,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 13	100	min. 8,9	325	1,7-2,2
ca. 65	11,4 4,0	1140-1150 1225-1255				390-510	250	7,3-7,5	900	6,2-6,4
							520-	580=2,0	1100	8,0-8,2

Torque control travel a = 0,9 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 146,0-149,0 (143,5-151,5)	1140-1150*	LDA 500	0,2 bar 123,0-127,0 (120,0-130,0)	100	225,0-245,0 (221,0-249,0)	1100	12,4+0,1
LDA	0,7 bar 157,0-161,0 (154,0-164,0)		LDA 500	0 bar 110,0-113,0 (107,5-115,5)	250	10,0-15,0 (7,5-17,5)	700	13,3+0,1
							900	13,0+0,2
							1000	12,5+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.84

C19

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C19

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 1 - 2 -

Test at n 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..LS 375 + RQV..PA 373 DR	0,70	0	13,3-13,4
		0,20	11,3-11,4
		0,32	11,8-11,9
			12,6-12,8

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

En

PES 6 P 110 A 720 LS 375 RQ 250/1100PA 658

Komb.-Nr. 0 402 046 251
0 402 046 253
0 402 046 297

supersedes 10.83
company MAN
engine D 2566 MT (F)
206 kW (280 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) mm (from BDC) Zyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	12,4+0,1	14,6-14,9	0,4(0,75)			
250	7,3-7,5	1,1-1,6	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point		Test specifications				Test specifications				Control rod travel	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,8	600	20,0	11,4,0	1145-1160	250	7,4	100	min.8,9	1100	12,4-12,5
VH	= max. 46°			1350	1900-1220			250	7,3-7,5	700	13,3-13,4
					0-1,0			355-395	= 2,0	880	13,1-13,3
										990	12,6-12,9

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes/mm
1	2	3	4	5	6	7
LDA 1100	0,7 bar 146,0-149,0 (143,5-151,5)	-	LDA 500	0,2 bar 123,0-127,0 (120,0-130,0)	100	215,0-225,0 (211,0-229,0)
LDA 700	0,7 bar 157,0-161,0 (154,0-164,0)		LDA 500	0 bar 110,0-113,0 (107,5-115,5)		

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 19

- 2

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6P..LS375 + RQ..PA658	0,70	0 0,20 0,32	13,3 - 13,4 11,3 - 11,4 11,8 - 11,9 12,4 - 12,8

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,1 q 23

2. Edition

En

PES 6 P 110 A 720 LS 375

RQ 250/1100 PA 658-4

Komb.-Nr. 0 402 046 258

supersedes 10.83

company: MAN

D 2566 MTSFV

engine: 191 kW/2200 min⁻¹

MAN-Nr. 2-7384

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,95-3,15)

mm (from BDC) Zyl. 6

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	11,7+0,1	13,6-13,8	0,4(0,8)			
250	6,8-7,0	1,1-1,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,8	600	20,0	10,7	1145-1160	250	7,0	100	min. 8,5	1100	11,7-11,8
VH =	max. 46°			4,0	1200-1230			250	6,9 - 7,1	700	11,7-11,9
				1350	0-1,0			370-410	= 2,0		

Torque control travel
on flyweight assembly dimension a =

0

mm

Speed regulation At

1145-1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /- 1000 strokes	rev/min		rev/min	cm ³ /- 1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3		4	5	6	7
LDA 1100	0,7 bar 136,0-138,0 (133,0-141,0)	-		LDA 500	0,17 bar 123,0-127,0 (120,0-130,0)	100	215,0-235,0
LDA 700	0,7 bar 133,0-137,0 (130,0-140,0)			LDA 500	0 bar 113,0-116,0 (110,0-119,0)		

Checking values in brackets

7.84

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D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 23

- 2 -

Test at n

500

rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure bar	Gauge pressure bar	mm (1)	
PES6P..LS375 + RQ..PA658-4	0,17			
		0,70		11,5 - 11,6
		0		11,7 - 11,8
		0,11		11,0 - 11,1
				11,2 - 11,4

Notes

(1) when n

rev/min and
gauge pressure

bar (maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1r5

1. Edition

En

PES6P110A720LS375 RQV 250-1100 PA 669
Komb.-Nr. 0 402 046 272
0 402 046 273

supersedes -
company: MAN
engine D 2566 MTF
206 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 mm (from BDC) 2y1 6
(2,95-3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,4+0,1	14,6-14,9	0,4(0,75)			
250	7,3-7,5	1,0-1,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1130	15,2-17,8	-	-	-	ca. 15	100	min. 8,9	300	2,0-2,5
ca. 66	11,4 4,0 1350	1140-1150 1235-1265 0-1,0				365-480 ③a	250	7,3-7,5	850 1000	5,9-6,1 8,2

Torque control travel a = 0,9 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed rev/min ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min cm ³ /1000 strokes		Starting fuel delivery Idle switching point ⑥ rev/min cm ³ /1000 strokes		Torque-control travel ⑤ rev/min Control rod travel mm	
1	2	3	4	5	6	7	8	9
LDA 1100	0,7 bar 146,0-149,0 (143,5-151,5)	1140-1150*	LDA 500	0,2 bar 123,0-127,0 (120,0-130,0)	100	225,0-245,0 (221,0-249,0)	1100	12,4+0,1
LDA 700	0,7 bar 157,0-161,0 (154,0-164,0)		LDA 500	0 bar 110,0-113,0 (107,5-115,5)	250	7,3-7,5 mmRW	700 900 1000	13,3+0,1 13,0+0,2 12,5+0,3

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

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D1

2A

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 r 5

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1)
PES6P...LS375 +RQV...PA 669	0,70	0 0,20 0,32	13,3-13,4 11,3-11,4 11,8-11,9 12,6-12,8

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 r 4

2. Edition

En

PE 6 P 110 A 320 RS 375 RQV 250-1100 PA 674

komb.-Nr. 0 402 046 282

supersedes 0,82

company MAN

engine D 2566 MTE
184 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 mm (from BDC) 7 v l. 6: RW = 9,0 - 12,0 mm
(2,95-3,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
800	12,8+0,1	15,9-16,2	0,4(0,75)			
250	6,9-7,1	1,1-1,6	0,45(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 13	100	min. 8,5	300	1,4-1,7
							250	6,9-7,1	800	5,0-5,2
							340	400=2,0	1100	7,9
ca. 46	10,5	1140-1150								
	4,0	1205-1235								
	1350	0 - 1,0								

Torque control travel a = 1,3 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 800	0,7 bar 150,0-162,0 (150,5-164,5)	1140-1150*	LDA 500	0,17 bar 122,0-126,0 (119,0-129,0)	100	215,0-235,0 (211,0-239,0)	800	12,8+0,1
LDA 1100	0,7 bar 136,0-140,0 (133,0-143,0)		LDA 500	0 bar 97,0-100,0 (94,5-102,5)	250	11,0-16,0 (8,5-18,5)	1100	11,5+0,1
							900	12,4+0,2
							1000	11,7+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.84

D3

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D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 r 4 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..LS 375 + RQ..FA 674	0,70	0 0,28 0,11	12,8-12,9 10,2-10,3 12,1-12,2 10,7-11,0

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 DAF11,6 t

5. Edition

En

Testoil-ISO 4113

PE 6 P 100 A 320 RS 384

RQ 225/1000 PA 571

Komb.-Nr. 0 401 846 452

1 - 5 - 3 - 6 - 2 - 4 je $60^{+0,5}_{-0,5}$ ($\pm 0,75^\circ$)

supersedes 11.82

DAF

company: DKDL 1160

engine: 125 kW (170 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	11,4+0,1	9,80 - 10,00	0,35(0,6)			
250	7,5-7,7	0,90 - 1,30	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check: ①		Full-load speed regulation Setting point ①				Idle speed regulation Setting point ①				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	9,6 4,0 1250	1045-1060 1100-1130 0 - 1,0	250	7,6	100 250 345-385 = 2,0	min. 8,4 7,5-7,7 = 2,0	1000 600 820 900	10,6-10,8 11,4-11,5 11,2-11,4 10,8-11,1

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation. At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a		Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3		rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
600	98,0 - 100,0 (96,0 - 102,0)	600		1000	93,0 - 97,0 (90,5 - 99,5)	100	170,0 - 210,0 (166,0-214,0) = 19,5 - 21,0 mm RW
						250	9,0 - 13,0 (6,5 - 15,5)

Checking values in brackets

7.84

D5

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 DAF 11,6 t 2

3. Edition

En

PE 6 P 100 A 320 RS 384 RQ 225/1100 PA 574
Komb.-Nr. 0 401 846 453

supersedes 11.82

company: DAF

engine: DKL
151 kW (205 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,2-3,3}
(3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	11,5+0,1	11,1-11,3	0,35(0,6)			
225	7,2-7,4	1,0 - 1,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control					
①		Setting point		Test specifications		④		Setting point		Test specifications		⑤		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm			
1	2	3	4	5	6	7	8	9	10	11	12				
550	15,6-16,4	550	16,0	9,8 4,0 1300	1140-1155 1170-1200 0 - 1,0	225	7,3	100 225 325-365=2,0	min. 7,5 7,2-7,4 2,0	600 1050 800 855	11,5-11,6 10,8-11,0 11,2-11,4 10,9-11,2				

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 DAF 11,6 w

1. Edition

En

PE 6 P 100 A 320 RS 384-1 RSV 250-1100 P 5/506

Komb.-Nr. 0 401 876 284

Note VDT-1-420/114

supersedes -
DAF
company DK 1160 V
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Testoil-ISO 4113

Port closing at prestroke 3,2-3,3
(3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
600	11,5+0,1	11,1-11,3	0,35(0,6)			
250	7,2-7,4	1,2-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	250	6,8	1050	10,8-11,0
	x = 4,25						250	7,2-7,4	600	11,5-11,6
							570-630	= 2,0	825	11,2-11,4
ca. 50	9,8	1125-1135							900	11,1-11,4
②a	4,0	1225-1255								
	1400	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
600	110,5-112,5 (108,5-114,5)	1125-1135*	1050	106,5-111,5 (104,0-114,0)	100	195,0-235,0 (191,0-239,0) = 19,5-21,0 mm RW	250	7,3	

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

D7

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 DAF 11,6 t 6

1. Edition.

En

PE 6 P 100 A 320 RS 384-1 RQ 225/1000 PA 571

Komb.-Nr. 0 401 846 465

supersedes

 company DAF
 engine DKDL 1160
 125 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke ^{3,2-3,3}
 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	11,4+0,1	9,8-10,0	0,35(0,6)			
250	7,5-7,7	0,9-1,3	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ①				Idle speed regulation Setting point ①				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	9,6 4,0 1250	1045-1060 1100-1130 0-1,0	250	7,6	100 250 345-385=2,0	min,8,4 7,5-7,7	600 1000 820 900	11,4-11,5 10,6-10,8 11,2-11,4 10,8-11,1

Torque-control travel on flyweight assembly dimension a = 0,5 mm

Speed regulation At 1045-1060 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm Control rod travel 7
600	98,0-100,0 (96,0-102,0)	600	1000	93,0-97,0 (90,5-99,5)	100	180,0-220,0 (176,0-224,0) = 19,5-21,0 mm RW

Checking values in brackets

7.84

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Test oil ISO 4113

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 DAF 11,6 s 3

1. Edition.

En

PE 6 P 100 A 320 RS 384-1 RQ 225/1100 PA 574

Komb.-Nr. 0 401 846 466

supersedes

company DAF

engine DKL 1160

151 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	11,5+0,1	11,1-11,3	0,35(0,6)			
225	7,2-7,4	1,0-1,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ④				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	9,8 4,0 1300	1140-1155 1170-1200 0-1,0	225	7,3	100 225 325-365	min,7,5 7,2-7,4 65=2,0	600 1050 800 855	11,5-11,6 10,8-11,0 11,2-11,4 10,9-11,2

Torque-control travel
on flyweight assembly dimension a = 0,25 mmSpeed regulation: At 1140-1155 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
600	110,5-112,5 (108,5-114,5)	600	1050	107,0-111,0 (104,5-113,5)	100 225	195,0-235,0 (191,0-239,0) = 19,5-21,0 mm RW 7,2-7,4 mm RW

Checking values in brackets

7.84

D9

D9

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Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 DAF 11,6 t 1

4. Edition

En

Testoil-ISO 4113

PE 6 P 110 A 320 RS 385
Komb.-Nr. 0 401 876 250
1 - 5 - 3 - 6 - 2 - 4
0 -60 -120-180-240-300¹ ± 0,5° (±0,75°)

RSV 250-750 P7/479

superse¹ 82
company DAF
engine DK, DKT, DKS, DKA 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) mm (from BDC) RW 9,0 - 12,0
2,80-2,90

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
750	12,6±0,1	16,9 - 17,2	0,4(0,75)			
250	6,8-7,0	2,5 - 3,3	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 18	250	6,9	-	-
	X =	3,75					250	6,8-7,0		
ca. 44		790-795 = 11,6					245-305 = 2,0mm			
②a		810-825 = 4,0								
		750 = 0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm ³ /1000 strokes 2	3		4	5	6	7	8	9
750	169,0 - 172,0 (166,5 - 174,5)	790-795 *	-	-	-			-	-
						250	25,0-33,0 (22,5-35,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

D10

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D10

7.84

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 11,6 t 4
2. Edition

40

En

PE 6 P 110 A 320 RS 385-1 RSV 250-750 P 7/479
Komb.-Nr. 0 401 876 256

superseded 11.82
DAF
company DK, DKT, DKS; DKA
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$
(2,75-2,95) mm (from BDC) = RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,6+0,1	17,0 -17,3	0,4(0,75)			
250	6,8-7,0	2,5-3,3	0,4 5(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			④ Lower rated speed Control-lever deflection in degrees 7			③ Torque control Control rod travel mm 11	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	
loose	800	0,3-1,0	-	-	-	ca. 18	250	6,9	-	-
	x = 3,75						250	6,8-7,0		
	245-305 = 2,0									
ca. 44	11,6	790-795								
②a	4,0	810-825								
	950	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1		⑥ Rotational speed limit Note changed to) rev/min 3		③a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		⑤ Idle stop Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		rev/min 8	
750	170,0-173,0 (167,5-175,5)	790-795*	-	-	-	250	25,0-33,0 (22,5-35,5)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

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D11

Test Specifications Fuel Injection Pumps ② and Governors

PES 6 P 120 A 720 LS 388 RQ 250/1050 PA 658-8
Komb.-Nr. 0 402 046 266
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes -

company: MAN
engine: D 2566 MK 279
206 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0-3,1}{(2,95-3,15)}$ mm (from BDC) $\frac{2yl. 6}{2yl. 6}$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,8+0,1	18,7-18,9	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ①				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600 VH =	19,2-20,8 max. 46°	600	20,0	9,7 4,0 1300	1095-1110 1175-1205 0-1,0	250	6,4	100 250 340-380 = 2,0	min. 7,9 6,3-6,5	750 1050 870 935	11,8-11,9 10,7-10,8 11,6-11,8 10,9-11,2

Torque-control travel
on flyweight assembly dimension a = 0,5 mm

Speed regulation At 1095-1110 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7
LDA 750	1,0 bar 187,0-189,0 (184,0-192,0)	-	LDA 650	1,0 bar 178,0-184,0 (175,0-187,0)	100	205,0-225,0 (201,0-229,0)
LDA 1050	1,0 bar 167,0-173,0 (164,0-176,0)		LDA 500	0 bar 113,0-115,0 (110,0-118,0)	250	6,3-6,5 mm RW

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 28

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	diminution difference mm (1)
PES6P..LS388 + RQ..PA658-8	1,0	0 0,31 0,44	11,8-11,9 9,5-9,6 10,5-10,6 11,2-11,6

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,1 q 26
2. Edition

En

PES 6 P 120 A 720 LS 388 Z RQ 250/1100 PA 658-7
Komb.-Nr. 0 402 046 286
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes 10.83
MAN
company: D 2566 MK/SIB
engine: 235 kW/2200 min⁻¹
MAN-Nr. 2-7463

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0-3,1}{(2,95-3,15)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,3+0,1	17,9-18,1	0,5(0,9)			
250	6,4-6,6	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6		Control rod travel mm 8	Test specifications Control rod travel mm 10			Control rod travel mm 12	
600	19,2-20,8	600	20,0	10,3	1145-1160	250	6,5	100	min.8,0	1100	1,3-11,4
VH=max. 46°				4,0	1185-1215			250	6,4-6,6	750	2,4-12,5
				1350	0-1,0			335-375	2,0	865	2,2-12,4
										970	1,5-11,8

Torque-control travel
on flyweight assembly dimension a = 0,45 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes / mm 7	Control rod travel mm
LDA 1100	0,7 bar 179,0-181,0 (176,0-184,0)	-		LDA 500	0,33 bar 146,0-152,0 (143,0-155,0)	100	205,0-225,0 (201,0-229,0)
LDA 750	0,7 bar 197,0-203,0 (194,0-206,0)			LDA 500	0 bar 103,0-105,0 (100,0-108,0)	250	12,0-18,0 (9,0-21,0)

Checking values in brackets

7.84

D14

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D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 26

- 2

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P..LS 388 Z RQ..PA 658-7	0,70	0 0,33 0,43	12,4-12,5 9,4-9,5 10,9-11,0 11,4-11,8

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

MPP 001/4 SCA 8,0 e

8. Edition

En

PE6P110 A 720 RS 393

RQV 200-1200 PA 467

supersedes 0.63

company: Scania

engine: DN 801

Komb.-Nr. 0 401 846 424

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,0-3,1$
(2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,0+0,1	8,7-8,9	0,5(0,7)			2,5 [±] 0,1
225	6,9-7,1	1,1-1,5	0,2(0,4)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 16	100	min. 8,4	150	0,5-0,8
ca. 61	11,0 4,0 1500	1240-1250 1365-1395 0 - 1,0					225 440-500=	6,9-7,1 2,0	500 850 1200	3,6-4,2 5,8-6,0 8,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
600	87,0-89,0 (85,0-91,0)	1240-1250*	1200	98,5-103,5 (96,0-106,0)	100	140,0-190,0 =20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 8,0 e 1

5. Edition

En

PE6P110A 720 RS 393

RQV 250-1200 PA469

superseded 10.83

company: Scania

engine: DN 801

Komb.-Nr. 0 401 846 423

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,0-3,1$ mm (from BDC)
(2,95-3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,0+0,1	8,7-8,9	0,5(0,7)			2,5 ± 0,1
225	6,9-7,1	1,1-1,5	0,2(0,4)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 13	100	min. 8,4	200	0,7-0,9
ca. 51	11,0 4,0 1450	1240-1250 1325-1355 0 - 1,0					225 335-395=2,0	6,9-7,1 2,0	500 800 1200	3,0-3,5 5,1-5,3 8,3

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
600	87,0-89,0 (85,0-91,0)	1240-1250*	1200	98,5-103,5 (96,0-106,0)	100	140,0-190,0 =20,0-21,0 mm R!	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

D17

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DA7

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 SCA 8,0 n 1

3. Edition

En

PE 6 P 110 A 720 RS 393 RQ 750 PA 528

Kom.-Nr. 0 401 846 479

supersede 10.83

company Scania

engine DN 8 01

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $3,0-3,1$
 $(2,95-3,15)$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,0+0,1	9,0-9,2	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9 rev/min 10		Torque control rev/min 11 Control rod travel mm 12	
-	-	-	-	11,0 4,0 850	750-755 784-797 0 - 1,0	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a = mmSpeed regulation: 750-755 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/- 1000 strokes 2	rev/min 3	rev/min 4	cm³/- 1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / min 7
700	90,0-92,0 (88,0-94,0)	-	-	-	100	140,0-190,0 = 20,0-21,0 mm RW

Checking values in brackets

7.84

D18

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 SCA 8,0 n

3. Edition

En

PE 6 P 110 A 720 RS 393 RQ 900 PA 528

Komb.-Nr. 0 401 846 480

supersedes 10.83
company Scania
engine DN 8 01

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,0 - 3,1$
(2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,0+0,1	9,4-9,6	0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
-	-	-	-	11,0 4,0 1000	900-905 941-955 0-1,0	-	-	-	-	-	-

Torque-control travel

on flyweight assembly dimension a =

mm

Speed regulation. At

900-905 min⁻¹

1 mm less control rod travel:

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6		Control rod travel mm 7	
850	94,0-96,0 (92,0-98,0)	-	-	-	-	100	140,0-190,0 = 20,0-21,0 mm RW		

Checking values in brackets

7.84

D19

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Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 DAF 11,6 n 3

2. Edition

En

PE 6 P 110 A 320 RS 407-1 RQ 250/1100 PA 428/2 R
Komb.-Nr. 0 401 846 469

supersedes 12.82
company: DAF
engine: DKTL 1160
185 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) mm (from BDC) = RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,3+0,1	14,1 - 14,4	0,4 (0,75)			
250	7,1-7,3	1,0-1,4	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Test specifications Control rod travel mm 4				Test specifications Control rod travel mm 10				Control rod travel mm 12	
600	15,6-16,4	600	16,0	11,3 4,0 1350	1145-1160 1200-1230 0 - 1,0	250	7,2	100 250 345-385 = 2,0	min. 7,8 7,1-7,3	850 1100	12,3+0,1 12,2+0,2

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1145-1160 min
1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /1000 strokes 2		Control rod travel mm 3a		cm ³ /1000 strokes 5		Control rod travel mm 6b	
LDA 850	0,5 bar 140,5-143,5 (138,0-146,0)	-		LDA 600	0 bar 136,5-139,5 (134,0-142,0)	100	245,0-285,0 (241,0-289,0) = 19,5-21,0 mm RW

Checking values in brackets

5.84

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 n 3

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: diminution difference mm (1)
PE6P..RS407-1 + RQ..PA 428/2R	0,30	0,50 0	12,1 - 12,2 12,3 - 12,4 12,0 - 12,1

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 v
2. Edition

En

PE6P110 A 320 RS 407-1

RSV 275-1000 P5/458-3

Komb.-Nr. 0 401 876 275

supersedes 3.84

company DAF

engine DKCL 1160

155 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9
(2,75- 2,95)

mm (from BQC RW) = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
600	12,3±0,1	14,0-14,3	0,4 (0,75)			
275	7,0-7,2	0,9 - 1,4	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 23	275	6,6	600	12,5-12,6
	x	= 4,5					275	7,0-7,2	1000	11,1-11,3
ca. 48	10,1	1040-1050					675-735	= 2,0	750	12,1-12,3
2a	4,0	1160-1190							850	11,4-11,7
	1325	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40 C (104 F)		Note changed to							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1040-1050*		LDA	0,7 bar	100	245,0-265,0	0 -	-
600	139,5-142,5 (137,0-145,0)			1000	114,5-119,5 (111,5-122,5)	275	(241,0-269,0) 9,0-14,0 (6,5-16,5)	0	-
				LDA	0 bar				
				600	136,5-139,5 (133,5-142,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

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D22

D22

D. Adjustment Test for Manifold Pressure Compensator

Test at n

600

rev/min decreasing pressure - in bar gauge pressure
increasing

DAF 11,6 v

-2-

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure bar	Gauge pressure bar	mm (1)	
PE6P..RS 407-1 +PSV..P5/458-3	0,70			12,3-12,4
		0		12,1-12,2
		0,28		12,2-12,3

Notes

(1) when n

rev/min and
gauge pressure

bar (1 = maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

 WPP 001/4 RVI 8,8 b 1
6. Edition

En

PES 6 P 120 A 320 RS 417 RQV 300-1150 PA 527 K

 Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

superseded 83

company RVI

engine MIDS 062030

158 kW (215 PS)

Komb.-Nr. 0 402 046 226

Port-closing mark 10,5° camshaft after port closing of cylinder 1.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1150	8,5-8,6	14,6-14,8	0,5(0,9)			
600	2,6-2,8	1,3-1,9	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca. 10	100 300	min. 5,7 4,1-4,3	250 550	0,4-0,7 3,6-3,7
ca. 57	7,5 4,0 1400	1205-1215 1275-1305 0-1,0				330-445 (3a)			850 1150	5,1-5,2 7,5

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	145,5-147,5 (142,5-150,5)	1205-1215*	750 500	125,0-131,0 (122,0-134,0) 71,0-77,0 (68,0-80,0)	100 300	125,0-145,0 (121,0-149,0) 18,0-24,0 (15,0-27,0)	1150 350 750 500	8,5±0,1 6,8±0,4 7,6±0,1 7,0±0,2

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

D24

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 v 1

2. Edition

En

PE6P 110 A 320 RS 407-1 RSV 275-1100 P 5/458-4
Komb.-Nr. 0 401 876 276

supersedes 3.84
company DAF
engine DKTL 1160
185 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,8 - 2,9 \\ (2,75 - 2,95) \end{matrix}$ mm (from BDG) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,3+0,1	14,1-14,4	0,4 (0,75)			
275	7,0-7,2	1,0- 1,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0 x = 3,25	-	-	-	ca. 18	275	6,6	400	12,5-12,6
							275	7,0-7,2	300	12,7-13,2
ca. 47	11,3	1135-1145					675 - 745	=2,0		
2a	4,0	1275-1305								
	1350	0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40 °C (104 °F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
LDA	0,7 bar	135-1145*	LDA	0 bar	100	245,0-285,0	-	-	
850	140,5-143,5 (138,0 - 146,0)		600	136,5-139,5 (134,0-142,0)	275	(241,0-289,0) 10,0-15,0 (7,5-17,5)			

Checking values in brackets

* 1 mm less control rod travel than col 2

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7.84

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 v 1 -2-

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P..RS 407-1 +RSV..P5/458-4	0,70	0 0,30	12,3 - 12,4 12,0 - 12,1 12,1 - 12,2

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 v 2

1. Edition

En

PE 6 P 110 A 320 RS 407-1 RSV 275-1000 P 5/458-5

Komb.-Nr. 0 401 876 277

Note VDT-I-420/114!

supersedes -
company DAF
engine DKFL 1160
185 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,8-2,9 \\ (2,75-2,95) \end{matrix}$ mm (from BDC) RW = 9,0 - 12,0 mm

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,8+0,1	15,1-15,4	0,4 (0,75)			
275	7,0-7,2	0,9-1,4	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 25	275	6,6	600	13,0-13,1
	x	5,0					275	7,0-7,2	1000	12,1-12,3
							700-760	=2,0	790	12,6-12,8
ca. 50	11,1	1040-1050							865	12,2-12,5
2a	4,0	1195-1225								
	1360	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 600	0,7 bar 151,0-154,0 (148,5-156,5)	1040-1050*		LDA 1000	0,7 bar 135,5-140,5 (132,5-143,5)	100	245-285,0 (241,0-289,0)	275	7,1
				LDA 600	0 bar 136,5-139,5 (133,5-142,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2
7.84

BOSCH

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D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 v 2

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P..RS407-1 + RSV..P5/458-5	0,70	0 0,30 0,26 :	12,8-12,9 12,1-12,2 12,6-12,7 12,3-12,5

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 DAF 11,6 n 4

2. Edition

En

PE 6 P 110 A 320 RS 407-1 RQ 275/1000 PA 641-1
Komb.-Nr. 0 401 846 474

supersedes 12.82
company DAF
engine: DKCL 1160
155 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,3+0,1	13,9-14,1	0,4(0,75)			
275	7,0-7,2	0,9 -1,4	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ④				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	11,3 4,0 1300	1045-1060 1105-1135 0 - 1,0	275	7,1	100 275 345	min. 8,6 7,0-7,2 385=2,0	600 1000 815 985	12,5+0,1 11,1+0,2 12,0+0,2 11,3+0,4

Torque-control travel
on flyweight assembly dimension a = 0,6 mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
LDA 600	0,7 bar 139,0-142,0 (136,5-144,5)	-	LDA 1000	0,7 bar 114,5-119,5 (111,5-122,5)	100	245,0-285,0 (241,0-289,0) = 19,5-21,0 mm RW
			LDA 600	0 bar 136,5-139,5 (134,0-142,0)		

Checking values in brackets

5.84

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Testoil-ISO 4113

E5

E5

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 n 4 - 2-

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PE 6 P.. RS 407-1 + RQ.. PA 641-1	0,28	0,50 0	12,2-12,3 12,3-12,4 12,1-12,3

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 11,6 o 2

2. Edition

En

supersedes 8.81

company: DAF

engine DKS 1160 P

Testoil-ISO 4113

PE 6 P 120 A 320 RS 415 RSV 250-1100 P5/474

Komb.-Nr. 0 401 876 247

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8 - 2,9}{(2,75 - 2,95)}$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
650	11,9+0,1	18,8 - 19,2	0,5(0,9)			
250	6,7-6,9	1,9 - 2,3	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 24	250	6,3	650	12,1+0,1
	x =	5,75							1100	10,4+0,2
							250	6,7-6,9	800	11,5+0,2
							410-475	=2,0	900	10,9+0,3
⑤ ca. 53	9,4	1140-1150								
	4,0	1200-1230								
	1350	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	5	4	5	6	7	8	9
LDA 650	0,7 bar 188,0-192,0 (185,0-195,0)	1140-1150*	LDA 1100 0,7 bar 186,0-192,0 (182,5-195,5) 0 bar 133,0-137,0 (130,0-140,0)	LDA 600		100	310,0-350,0 (306,0-354,0) = 19,5 - 21,0 mm RW	250	6,8

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.84

E7

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D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 o 2

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Testoil-ISO 4113

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
.. RS 415 with .. P5/474	0,7	0,27 0,12 0	11,9 - 12,0 11,4 - 11,5 10,2 - 10,4 9,8 - 9,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 DAF 11,6 y

1. Edition

En

PE 6 P 120 A 320 RS 415-1 RQ 250/1100 PA 417-2
Komb.-Nr. 0 401 846 493

supersedes
company DAF
engine DKV 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test oil: ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke

 $2,8 - 2,9$
(2,75-2,95)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	11,6+0,1	17,9 - 18,3	0,5 (0,9)			
250	6,2-6,4	1,1 - 1,5	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ④				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6 - 16,4	700	16,0	9,6	1135-1150	250	6,3	100	min. 7,2	650	1,8-11,9
				4,0	1190-1220			250	6,2 - 6,4	1090	0,6-10,8
				1300	0 - 1,0			435	475 = 2,0	785	1,5-11,7
										905	0,8-11,1

Torque-control travel on flyweight assembly dimension a =

0,55 mm

Speed regulation: At 1135 - 1150 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm Control rod travel 7
LDA	0,7 bar	-	LDA	0,7 bar	100	320,0 - 360,0 (316,0 - 364,0)
650	179,0 - 183,0 (176,0 - 186,0)		1090	197,0 - 203,0 (193,5 - 206,5)		= 19,5 - 21,0 mm RW
			LDA	0 bar		
			600	151,0 - 155,0 (148,0 - 158,0)	250	6,2 - 6,4 mmRW

Checking values in brackets

7.84

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 y

-2-

Test at n 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1)
PE 6 P., RS 415-1 + RQ.. PA 417-2	0,70	0 0,44 0,35 :	11,6 - 11,7 10,5 - 10,6 11,3 - 11,4 10,7 - 10,9

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 o 4
2. Edition

En

PE 6 P 120 A 320 RS 415-1 RSV 250-1100 P5/474

Komb.-Nr. 0 401 876 258

supersedes 1.03

company DAF

engine DKS-1160 P

Note VDT-1-420/114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,8-2,9

Port closing at prestroke (2,75-2,95)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	11,9+0,1	18,8-19,2	0,5(0,9)			
250	6,7-6,9	1,9-2,3	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Control lever deflection in degrees rev/min			3 Torque control rev/min	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 24	250	6,3	650	12,1-12,2
	x = 5,0						250	6,7-6,9	1100	10,4-10,6
ca. 53	9,4	1140-1150					410-475	2,0	800	11,5-11,7
2a	4,0	1200-1230							900	10,9-11,2
	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational speed limit Note changed to) rev/min		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2	3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 650	0,7 bar 188,0-192,0 (185,0-195,0)	1140-1150*		LDA 1100	0,7 bar 186,0-192,0 (182,5-195,5)	100	310,0-350,0 (306,0-354,0) = 19,5 - 21,0 mm RW	-	-
				LDA 600	0 bar 133,0-137,0 (130,0-140,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

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5.84

D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure increasing

DAF 11,6 o 4

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PE 6 P.. RS 415-1 + RSV..P 5/474	0,27	0,70 0 0,12	11,4-11,5 11,9-12,0 9,8-9,9 10,2-10,4

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 b 2

5. Edition

En

PES 6 P 120 A 320 RS 417 RQV 300-1150 PA 527-1K

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes 3.83

company: RVI

engine: MIDR 062030

Komb.-Nr. 0 402 046 247

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	8,5-8,6	14,8-15,0	0,5 (0,9)			
300	4,1-4,3	1,8-2,4	0,5 (0,9)			
Port closing mark at 6° cam shaft after port closing for 1st. cylinder at control rod travel 9.0-12.0 mm.						

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 10	100	min. 5,7	250	0,4-0,7
ca. 58	7,5	1205-1215					300	4,1-4,3	550	3,6-3,7
	4,0	1275-1305							850	5,1-5,2
	1450	0 - 1,0				330-445 (3a)			1150	7,5

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop. Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	147,5-149,5 (144,5-152,5)	1205-1215*	750	132,0-138,0 (129,0-141,0)	100	120,0-140,0 (116,0-144,0)	1150	8,5+0,1 7,0+0,4
			500	80,0-86,0 (77,0-89,0)	300	18,0-24,0 (15,0-27,0)	750	7,7+0,2 7,2+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.84

E13

E13

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 RVI 9,8 a 2

1. Edition.

En

PES 6 P 120 A 320 RS 419-1 RQ 750 PA 595-1
Komb.-Nr. 0 402 046 232
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes...

company RVI

engine: MIDS 062045
130 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,8-2,9}
(2,75-2,95) mm (from BDCRW = 9,0-12,0 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,3+0,1	24,6-24,8	0,5(0,9)			
250	5,8-6,0	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation		Idle speed regulation		Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Test specifications Control rod travel mm 4 rev/min 6	Setting point rev/min 7	Test specifications Control rod travel mm 8 rev/min 9	rev/min 11	Control rod travel mm 12
-	-	-	12,3 4,0 900	-	-	-	-
			750-755 787-800 0-1,0				

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

750-755 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7
700	246,0-248,0 (243,0-251,0)	-	-	-	100	160,0-180,0 (156,0-184,0)

Checking values in brackets

5.84

E14

E14

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 11,4 h

5. Edition

En

PES 6 P 110 A 820 LS 422 RQ 300/1100 PA 327-1

Komb.-Nr. 0 402 046 218
0 402 046 239superseded 7.83
company Daimler-Benz
OM 407
engine: 147 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,6+0,1	10,3-10,5	0,4(0,8)			
300	8,2-8,4	1,4-2,0	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
600	13,0-14,0	600	13,5	9,6 4,0 1350	1145-1160 1175-1205 0-1,5	300	6,1	100 min.7,5 300 6,0-6,2 350-390=2,0		-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1145-1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) rev/min 1 cm ³ /1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm ³ /1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm ³ /1000 strokes / mm Control rod travel 7	
1100	103,0-105,0 (100,0-108,0)	500	500	76,0-80,0 (73,0-83,0)	100	130,0-150,0 (126,0-154,0)	

Checking values in brackets

5.84

E15

E45

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②

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 9,5 a
5. Edition

En

Testoil-ISO 4113

PES 5 P 110 A 820 LS 434
Komb.-Nr. 0 402 045 022
1 - 3 - 5 - 4 - 2RQ 300/1100 PA 327-3
je 72 ± 0,5° (0,75°)superseded 10.83
company Daimler-Benz
engine OM 409
141 kW (192 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,00-3,10}
(2,95-3,15) mm (from BDC) Zyl. 5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,4±0,1	12,0 - 12,2	0,4(0,8)			
300	8,0-8,2	1,2 - 1,8	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider		Full load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications rev/min 5	Control rod travel mm 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,8-14,6	600	14,2	10,5 4,0	1145-1160 1175-1205	300	7,1	100 300 375-415=2,0	min. 10,0 8,0-8,2	-	-

Torque control travel
on flyweight assembly dimension a

mm

Speed regulation A 1145 - 1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm ³ /100 strokes 2	rev/min 3	rev/min 4	cm ³ /100 strokes 5	rev/min 6	cm ³ /100 strokes 7
1100	120,0 - 122,0 (117,0 - 125,0)	-	600	102,0 - 106,0 (99,0 - 109,0)	100	130,0 - 150,0 (126,0 - 154,0)

Checking values in brackets

5.84

E16

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E46

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 MB 9,5 a 5

3. Edition

En

PES 5 P 110 A 820 LS 434 RSV 350-1100 P0/485

1 - 3 - 5 - 4 - 2 je 72° ± 0,5° (± 0,75°)

Komb.-Nr. 0 402 075 002

supersedes 10.83

company Daimler-Benz

engine OM 409

137 kW (186 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 mm (from BDC)
(2,95-3,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1080	11,4±0,1	12,0-12,2	0,4 (0,8)			
350	7,7-7,9	1,1-1,7	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 27	350	7,8	-	-
	x = 2,25						350	7,7-7,9		
							470-530	2,0		
ca. 48	10,4	1120-1130								
②a	4,0	1190-1220								
	1300	0,3-1,7								

The numbers denote the sequence of the tests Set idle-speed auxiliary spring at 2 mm control-rod travel.

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	5	6	7	8	9
1080	120,0-122,0 (117,0-125,0)	1120-1130*	-	-	-	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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5.84

E17

E17

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 9,8 b 2

1. Edition

En

PE 6 P 120 A 320 RS 438-1 RQV 275-1200 PA648
Komb.-Nr. 0 401 846 497
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes -

compaRVI

engineMIDS 062030

150 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $3,5 - 3,6$
(3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,2+0,1	13,3 - 13,5	0,5 (0,9)			
275	7,4-7,6	1,5 - 2,1	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1230	15,2-17,8	-	-	-	ca. 12	200	min. 9,0	250	0 - 0,8
ca. 65	10,2 4,0 1500	1255-1265 1365-1395 0-1,0				275-360 (3a)	275	5,9-6,1	570 880 1200	4,7-5,0 6,1-6,3 8,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1200	133,0-135,0 (130,0-138,0)	1255-1265*	750	116,0-122,0 (113,0-125,0)	100	180,0-200,0 (176,0-204,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

E18

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E18

6.84

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 u

4. Edition

En

PE 6 P 110 A 720 RS 441 RSV 250-1200 P 5/493
Komb.-Nr. 0 401 876 252

supersedes 7.83
company DAF
engine DHS 825

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$ mm (from BDC) RW=9,0-12,0 mm
(2,75-2,95)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	12,2+0,1	13,7-14,0	0,4 (0,75)			
250	5,0-5,2	0,7-1,2	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Control lever deflection in degrees		Lower rated speed		3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min						rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7		8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 24		250	4,6	400	12,4-12,5
		X = 5,0						250	5,0-5,2	300	12,6-13,1
								525-585	=2,0		
ca. 58	11,2	1240-1250									
2a	4,0	1330-1360									
	1500	0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery		5 Idle stop	
Test oil temp 40 °C (104 °F)		Note changed to) rev/min				Idle			
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA 1000	0,7 bar 137,0-140,0 134,5-142,5	1240-1250*		LDA 600	0 bar 91,5-94,5 (89,0-97,0)	100	245,0-285,0 (241,0-289,0) =19,5-21,0 mm RW	-	-
						250	7,0-12,0 (4,5-14,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 u

-2-

Test at n 500 rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 441 + RSV..P 5/493	0,70	0	12,2-12,3
		0,36	10,1-10,2
		0,27	11,7-11,8
			10,8-11,2

Notes

(1) when n

rev/min and
gauge pressure -

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 DAF 11,6 u 1

2. Edition

En

PE 6 P 110 A 720 RS 441 RQ 225/1200 PA 617
Komb.-Nr. 0 401 846 461

superseded 1.82
company DAF
engine DHS 825

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,8-2,9} (2,75-2,95) mm (from BDQW=9,0 - 12,0 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,2+0,1	13,7-14,0	0,4 (0,75)			
225	5,5-5,7	1,0 - 1,5	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
650	15,6-16,4	650	16,0	11,2 4,0 1450	1235-1250 1310-1340 0 - 1,0	225	5,3	100 225 370-410	min. 6,7 5,5-5,7 = 2,0	1000 1190	12,2-12,3 12,1-12,3

Torque-control travel on flyweight assembly dimension a = mm Speed regulation A 1235-1250 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm ³ /1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm ³ /1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm ³ /1000 strokes/mm 7	
LDA 1000	0,7 bar 136,5-139,5 (134,0-142,0)	-	-	LDA 600	0 bar 91,5-94,5 (89,0-97,0)	100	245,0-285,0 (241,0-289,0) = 19,5-21,0 mm RW

Checking values in brackets

5.84

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 u 1 - 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PE6P..RS441 + RQ..PA617	0,36	0,70 0 0,29	11,7 - 11,8 12,2 - 12,3 10,1 - 10,2 10,8 - 11,2

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

Testoil-ISO 4113

PES 6 P 110 A 820 LS 442 RQ 300/1100 PA 327-5
Komb.-Nr. 0 402 046 234

supersedes 7.83
Daimler-Benz
company OM 407
engine 162 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,2-3,3}
(3,15-3,35) mm (from BDC) ³yl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0±0,1	11,6-11,8	0,4(0,8)			
300	8,0-8,2	1,2-1,8	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,0-14,0	600	13,5	10,0 4,0 1300	1145-1160 1180-1210 0-1,0	300	8,1	100 300 375-415	min. 9,5 8,0-8,2 = 2,0	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7
1100	116,0 - 118,0 (113,5 - 120,5)	500	600	93,0 - 97,0 (90,0 - 100,0)	100	130,0 - 150,0 (126,0 - 154,0)

Checking values in brackets

7,84

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 11,4 L3

3. Edition

En

Testoil-ISO 4113

PES G P 110 A 820 LS 442

RQV 300-1100 PA 594-3

 Komb.-Nr. 0 402 046 233
 0 402 046 301

 1.83
 supersedes
 company Daimler-Benz
 engine OM 407
 162 kW (220 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{3,2-3,3}{(3,15-3,35)}$ mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0+0,1	11,6 - 11,8	0,4(0,8)			
300	8,0-8,2	1,4 - 2,0	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 32	100 300	min. 9,0 7,3-7,5	250 530	1,0-1,3 3,9-4,2
ca. 60	10,0 4,0 1300	1140-1150 1175-1205 0 - 1,0				320-450			820 1100	5,5-5,8 8,1

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	116,0-118,0 (113,0-121,0)	1140-1150*	600	93,0- 97,0 90,0-100,0)	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 11,4 1 6

2. Edition

En

PES 6 P 110 A 820 LS 442-1 RSV 350-1100 P 0/485

Komb.-Nr. 0 402 076 053

supersedes 1.83

company Daimler-Benz

OM 407

engine 177 kW (241 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 - 3,3
(3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	12,5-12,7	0,4 (0,8)			
350	7,8-8,0	1,4-2,0	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-		350	7,9	-	-
	x	= 3,0					350	7,8-8,0		
ca .51	10,7	1140-1150					435-495	= 2,0		
2a	4,0	1220-1250								
	1250	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1100	125,0-127,0 (122,0-130,0)	1140-1150*	600	111,0-115,0 (108,0-118,0)	100	140,0-160,0 (136,0-164,0)	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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7.84

F1

FA

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 8,3 o
2. Edition

En

PE 6 P 100 A 720 RS 447 RSV 250-1200 P5/493
Komb.-Nr. 0 401 876 260

supersedes 6.83
company DAF
engine DHT 825

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 - 3,3
(3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,4+0,1	11,9-12,1	0,35(0,6)			
250	5,3-5,5	0,7-1,1	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control lever deflection in degrees rev/min Control rod travel mm rev/min Control rod travel mm rev/min Control rod travel mm			3 Torque control rev/min Control rod travel mm	
loose	800	0,3-1,0	-	-	-	ca.24	250	4,9	400	11,6-11,7
	x	= 5,0					100	min. 7,0	300	11,8-12,3
ca.58	10,4	1240-1250					250	5,3 - 5,5		
2a	4,0	1325-1355					540-600	= 2,0		
	1530	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min cm ³ /1000 strokes		6 Rotational speed limit Note changed to) rev/min		3a Fuel delivery characteristics rev/min cm ³ /1000 strokes		Starting fuel delivery 5 Idle rev/min cm ³ /1000 strokes		4a Idle stop rev/min Control rod travel mm	
LDA	0,7 bar	1240-1250*	LDA	0 bar	100	210,0-230,0	0,0	-	-
1000	118,5-120,5 (116,5-122,5)		600	92,5-96,5 (90,0-99,0)	250	(206,0-234,0)	4,0		
						7,0-11,0 (4,5-13,5)			

Checking values in brackets

* 1 mm less control rod travel than col 2

F2

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D. Adjustment Test for Manifold Pressure Compensator

DAF 8,3 0

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P..RS447 + RSV..P5/493	0,32		11,1 - 11,2
		0,70	11,4 - 11,5
		0	10,4 - 10,5
		0,23	10,5 - 10,9

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

PE 6 P 100 A 720 RS 447 RQ 225/1200 PA 617
Komb.-Nr. 0 401 846 471

supersedes 3.83

company DAF

engine DHT 825

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,2 - 3,3$ mm (from BDC)
(3,15-3,35)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,4+0,1	11,9-12,1	0,35(0,6)			
225	5,3-5,5	1,0-1,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
650	15,6-16,4	650	16,0	10,4 4,0 1450	1235-1250 1305-1335 0 - 1,0	225	5,4	100 225 365-405 = 2,0	min. 6,0 5,3- 5,5	1000 200	1,4-11,5 1,3-11,5

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1235-1250 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm ³ /1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm ³ /1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm ³ /1000 strokes/mm 7	
LDA 1000	0,7 bar 118,5-120,5 (116,5-122,5)	-	-	LDA 600	0 bar 92,5-96,5 (90,5-98,5)	100	210,0-230,0 (206,0-234,0) = 19,5-21,0 mm RW
						225	10,0-14,0 (7,5-16,5)

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

DAF 8,3 0 1 - 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 447 + RQ..PA 617	0,32	0,70 0 0,27	11,1 - 11,2 11,4 - 11,5 10,4 - 10,5 10,5 - 10,9

Notes

(1) when n

rev/min and
gauge pressure =

bar (- maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 UNI 10,3 a

2. Edition

En

PE 6 P 110 A 720 RS 453

RQV 425-1000 PA 438-1

supersedes 83

company: Unic-IVECO

engine: 8205-03-500

129 kW (175 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,0+0,1	9,8-10,1	0,4 (0,75)			
425	6,9-7,1	2,1-2,7	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1160	15,2-17,8	-	-	-	ca. 15	100	min. 8,5	400	1,5-1,6
ca. 55	9,0 4,0 1300	1040-1050 1150-1180 0-1,0				420-515	425	6,9-7,1	600 800 1000	3,7-4,3 5,8-6,1 7,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	98,0-101,0 (95,5-103,5)	1040-1050*	-	-	100	220,0-240,0 (216,0-244,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

F6

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F6

Test Specifications

Fuel Injection Pumps ②

and Governors

WPP 001/4 MAN 11,9 a

2. Edition

En

PE 6 P 120 A 720 LS 470 RQ 250/1100 PA 684
 Komb.-Nr. 0 402 046 288
 Values only apply to test nozzle-and-holder
 assembly 1 688 901 019 and fuel-injection test
 tubing 1 680 750 067

supersedes 9.83
 MAN
 company: D 2866 KF
 engine: 265 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,8 - 2,9 \\ (2,75 - 2,95) \end{matrix}$ mm (from BDC) Zyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,1	23,8-24,0	0,5(0,9)			
250	5,2-5,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		Test specifications Control rod travel mm 5		Control rod travel mm 8		Test specifications Control rod travel mm 10		Control rod travel mm 12	
600	19,2-20,8	600	20,0	10,3	1145-1160	250	5,3	100	min. 6,8	750	12,5-12,6
VH = max. 46°				4,0	1180-1210			250	5,2-5,4	1100	11,3-11,4
				1300	0-1,0			315-355	= 2,0	935	12,4-12,6
										990	11,7-12,0

Torque-control travel
on flyweight assembly dimension a = 0,45 mmSpeed regulation: At 1145-1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes / mm 7	
LDA 750	1,0 bar 238,0-240,0 (235,0-243,0)	-		LDA 650	1,0 bar 239,0-245,0 (236,0-248,0)	100	225,0-245,0 (221,0-249,0)
LDA 1100	1,0 bar 213,0-219,0 (210,0-222,0)			LDA 500	0 bar 139,0-141,0 (136,0-144,0)		

Checking values in brackets

7.84

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9 a

- 2 -

Test at r. 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P..LS470 + RQ..PA684	1,0	0	12,5 - 12,6
		0,40	9,3 - 9,4
		0,24	11,1 - 11,2
			10,2 - 10,6
		:	

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,9 a1

2. Edition

En

PE 6 P 120 A 720 LS 470 ROV 250-1100 PA 700

superseded 9.83

company: MAN

engine D2866 KF
265 kW

Komb.-Nr. 0 402 046 295

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 mm (from BDC) Zyl. 6; RW = 9,0 - 12,0 mm
(2,75-2,95)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	12,5+0,1	23,8-24,0	0,5(0,9)			
250	5,2-5,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1170	15,2-17,8	-	-	-	ca. 9	100	min. 6,8	325	1,6-2,0
ca. 62	10,3	1140-1150					250	5,2-5,4	800	5,3-5,5
	4,0	1225-1255					360-420	2,0	1100	7,8
	1350	0 - 1,0								

Torque control travel a = 1,15 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 750	1,0 bar 238,0-240,0 (235,0-243,0)	1140-1150*	LDA 650	1,0 bar 239,0-245,0 (236,0-248,0)	100	225,0-245,0 (221,0-249,0)	750	12,5+0,1
LDA 1100	1,0 bar 213,0-219,0 (210,0-222,0)		LDA 500	0 bar 139,0-141,0 (136,0-144,0)			1100	11,3+0,1
							900	12,1+0,2
							1000	11,5+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

F9

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D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9 a 1 -2-

Test at n 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel diminution difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1)
PE6P..LS 470 +RQV..PA 700	1,0	0 0,40 0,24	12,5-12,6 9,3-9,4 11,1-11,2 10,2-10,6

Notes

(1) when n

rev/min and
gauge pressure =

bar (: maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,9a3

1. Edition

En

PES 6 P 120 A 720 LS 470-1

RQV 250-1100 PA 707

Komb.-Nr. 0 402 046 296

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes

company: MAN

engine D 2866 KUL

265 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8 - 2,9$
(2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,7+0,1	23,0-23,2	0,5 (0,9)			
250	5,4-5,6	1,2-1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1120	15,2 - 17,8	-	-	-	ca. 12	100	min. 7,0	200	1,4-1,6
ca. 65	10,9	1140-1150					250	5,4-5,6	850	5,0-6,2
	4,0	1225-1255							1100	8,3
	1350	0 - 1,0				330-450 (3a)				

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 750	1,0 bar 230,0-232,0 (227,0-235,0)	1140-1160*	LDA 650	1,0 bar 231,0 -237,0 (228,0-240,0)	100	225,0 -245,0 (221,0 -249,0)	750 1100 935	12,7+0,1 11,9+0,1 12,5+0,2
LDA 1100	1,0 bar 218,0-224,0 (215,0-227,0)		LDA 500	0 bar 128,0-130,0 (125,0-133,0)			1010	12,0+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2
6.84

F11

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D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9a3

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PES 6 P. LS 470-1 + RQV. PA 707	1,0	0 0,40 0,19	12,7 - 12,8 9,4 - 9,5 11,2 - 11,3 9,9 - 10,3

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 11,6 a

2. Edition.

En

PE 6 P 100 A 720 RS 473 RQ 300/1100 PA 269-1
Komb.-Nr. 0 401 846 494

supersedes 12.83
company Daimler-Benz
engine OM 355
177 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,5-3,6}
(3,45-3,65) mm (from BDCRW=9,0-12,0 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,1+0,1	12,5-12,7	0,35(0,6)			
300	8,1-8,3	1,7-2,3	0,35(0,55)			
600	---	C, Sp. 4u.5	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ①				Idle speed regulation Setting point ①				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	12,1 4,0 1350	1145-1160 1200-1230 0-1,	300	6,1	100 300 350-1	min.7,5 6,0-6,2 2,0	-	-

Torque-control travel
on flyweight assembly dimension a = mm

Speed regulation: At

1145-1160 min⁻¹
1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7
1100	125,0-127,0 (123,0-129,0)	-	600	117,0-121,0 (114,5-123,5)	100	150,0-170,0 (146,0-174,0)

Checking values in brackets

7.84

F13

F13

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Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 VOL 12,0g2

2. Edition

En

7.83

PE 6 P 120 A 320 RS 3075 RSV 650-750 P4/421

supersedes

company Volvo

engine

T1D 120 FG

Komb.-Nr. 0 401 876 718

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,8+0,1	23,3 - 23,5	0,5 (0,9)			
650	4,0-4,2	2,2 - 2,6	0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,7	-	-	-	ca. 33	650	4,1	-	-
	x = 2,75						650	4,0 - 4,2		
ca. 37	10,8	750-755					650 - 710	2,0		
②a	4,0	775-785								
	930	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
700	233,0 - 235,0 (230,0-238,0)	750 - 750*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 1 p 2

1. Edition

En

Testoil-ISO 4113

PE 12 P 110 A 920 LS 3081

RQV 300-1075 PA 588

supersedes

company KHD

engine: BF 12 L 413 FC

1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12

0-45-60-105-120-135-180-195-240-255-300-315⁰ ± 0,5⁰ (± 0,75⁰)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$
($2,75-2,95$) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1075	11,2+0,1	13,2 - 13,6	0,4 (0,8)			
300	6,7-6,9	1,6 - 2,2	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca. 13	100 300	min. 8,3 6,7-6,9	250 525 800 1075	0,6-0,8 3,5-3,7 5,8-6,0 8,1
ca. 65	10,2 4,0 1300	1115-1125 1175-1205 0-1,0				350-500				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) 2		Rotational-speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5a		Starting fuel delivery Idle switching point 6		Torque-control travel 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1075	0,75 bar 132,0-136,0 (130,0-138,0)	1115 - 1125*	LDA 850	0,75 bar 129,0-133,0 (126,0-136,0)	100	130,0-150,0	-	-
			LDA 500	0 bar 82,0-84,0 (78,0-88,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

-2-
KHD 1 p 2

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure bar	Gauge pressure = bar	mm (1)
PE 12 P..LS 3081 with. PA 588	0,75	0 0,35 0,23	11,2 - 11,3 9,2 - 9,3 10,4 - 10,5 9,6 - 9,8

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

En

Page 1 of 1

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 UNI 9,6 a 2

1. Edition

En

PES 6 P 110 A 720 RS 3105 RQ 275/1150 PA 711

Komb.-Nr. 0 402 046 748

supersedes -

company: UNIC-IVECO
engine: 8220-22.709
177 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(3, 15-3, 55)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,3+0,1	11,4-11,7	0,4(0,75)			
275	5,9-6,1	1,5-2,0	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
600	19,2-20,8 max. 46°	600	20,0	10,3 4,0 1400	1195-1210 1245-1375 0-1,0	275	6,0	100 275 350-390=2,0	min.7,5 5,9-6,1	1150 600	11,3-11,4 11,3-11,5

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At 1195-1210 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
LDA 1150	0,7 bar 114,0-117,0 (111,5-119,5)	-	-	LDA 400	0 bar 75,0-78,0 (72,5-80,5)	100	160,0-180,0 (156,0-184,0)

Checking values in brackets

F17

F17

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6.84

D. Adjustment Test for Manifold Pressure Compensator

UNI 9,6 a 2

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..RS 3105 +RQ.. PA 711	0,70	0 0,26 0,20	11,3-11,4 10,0-10,1 10,9-11,0 10,3-10,5

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 PEN 12,0e
1. Edition

En

PE 6 P 120 A 320 RS 3121 RSV 200-900 P4/421 R
Komb.-Nr. 0 401 876 732

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes
company Volvo-Penta
engine TAMD 121 C

A. Fuel Injection Pump Settings

Port closing at prestroke $2,6 - 2,7$
(2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
700	11,8±0,1	23,7 - 23,9	0,5 (0,9)			2,5 ± 0,1
200	5,5-5,7	1,6 - 2,2	0,5 (0,7)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,7	-	-	-	ca. 20	200	5,1	-	-
		x = 4,0					200	5,5-5,7		
ca. 53	10,8	940-950					265-325	= 2,0		
②a	4,0	970-1000								
	1130	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	Control rod travel mm 9
700	237,0 - 239,0 (234,0 - 242,0)	* 940-950	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

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F19

F19

Test Specifications Fuel Injection Pumps ② and Governors

PE 6 P 110 A 320 LS 3805 RQ 300/1150 PA 187-6

Komb.-Nr. 0 401 846 749

1 - 6 - 3 - 5 - 2 - 4

0 - 75-120-195-240-315⁰ ± 0,5⁰ (± 0,75⁰)

See Service Information VDT-I-401/102

supersedes 9.83

company: Daimler-Benz

engine: OM 421

159 kW (216 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

4,0 - 4,1
(3,95-4,15)

mm (from BDC Zyl. 6; RW = 9,0 - 12,0 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery * cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,5+0,1	12,8-13,0	0,4(0,8)	12,4+0,1	13,2-13,4	
300	8,3-8,5	1,2-1,8	0,4(0,7)	8,3-8,5	1,2-1,8	
600	-	C, Sp. 4 u. 5	0,6(0,9)	-	C, Sp. 4 u. 5	
* with return throttle (1)				* without return throttle (2)		

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11		Control rod travel mm 12	
650	13,2-14,0	650	13,6	11,5 4,0 1350	1195-1210 1240-1270 0 - 1,0	300	8,4	100 300 430-470	min. 10,0 8,3-8,5 =2,0	-	-	-	-

Torque-control travel

on flyweight assembly dimension a = mm

Speed regulation: At

1195-1210 min

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /1000 strokes 2		cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		Control rod travel mm 8	
(1) 1150	128,0-130,0 (125,0-133,0)	600	600	120,0-124,0 (117,0-127,0)	100	130,0-150,0 (126,0-154,0)	

Checking values in brackets

B. Governor Settings

MB 11,0 c 1

- 2 - (2)

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
(1)		Setting point		Test specifications		Setting point		Test specifications		(3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
650	13,2-14,0	650	13,6	11,5 4,0 1350	1195-1210 1240-1270 0 - 1,0	300	8,4	100 300 430-470	min. 10,0 8,3-8,5 = 2,0	-	-

Torque control travel on flyweight assembly dimension a - mm Speed regulation At 1195-1210 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
(2)		(3a)		(3b)		(6)	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3	4	5	6	7	Control rod travel
(2) 1150	132,0-134,0 (129,5-136,5)	600	600	600	110,0-114,0 (107,0-117,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
(1)		Setting point		Test specifications		Setting point		Test specifications		(3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque control travel on flyweight assembly dimension a - mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
(2)		(3a)		(3b)		(6)	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3	4	5	6	7	Control rod travel

F21 En Checking values in brackets

②

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 11,0h

3. Edition

En

40

Testoil-ISO 4113

PE 6 P 110 A 320 LS 3805

RQ 750 PA 374 R

Komb.-Nr. 0 401 846 738

1 - 6 - 3 - 5 - 2 - 4

0 -75 -120-195-240-315^{±0,5°} (±0,75°)

See Service Information VDT-I-401/102

supersedes 2.81

company Daimler Benz

OM 421

engine 116 kW (158 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{(3,95-4,15)}{4,00-4,10}$ mm (from BDC) RW 10,5 / Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery * cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,8±0,1	14,1 - 14,3	0,4(0,8)	13,8±0,1	14,1-14,3	
300	8,2-8,4	1,3-1,9	0,4(0,7)	8,2-8,4	1,3-1,9	
* with return throttle (1)				* without return throttle (2)		

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ④				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	12,8	750-755	-	-	-	-	-	-
				4,0	795-805						

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
700 (1) u. (2)	141,0 - 143,0 (138,0 - 146,0)	-	-	-	100	130,0 - 150,0

Checking values in brackets

F22

F22

BOSCH

 Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung
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5.84

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 MB 11,0 c 2

3. Edition

En

PE6P!10A 320LS 3805
Komb.-Nr. 0 401 846 748

ROV 300-1150PA 524-4

supersedes 9.83
company Daimler-Benz
engine OM 421
159 kW (216 PS)

1 - 6 - 3 - 5 - 2 - 4

0 - 75-120-195-240-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Note VDT-I-401/102

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0-4,1$ mm (from BDC) Zyl. 6; PM=9,0-12,0 mm
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery * cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,5+0,1	12,8-13,0	0,4(0,8)	12,4+0,1	13,2-13,4	
300	8,3-8,5	1,2-1,8	0,4(0,7)	8,3-8,5	1,2-1,8	
600	-	C. Sp. 4 u. 5	0,6(0,9)	-	C. Sp. 4 u. 5	
* with return throttle (1)				* without return throttle (2)		

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 19	100	min. 10,0	250	1,0-1,2
ca. 65	11,5	1190-1200					300	8,3-8,5	550	3,4-3,7
	4,0	1240-1270							850	4,9-5,3
	1400	0-1,0					330-730 ③a		1150	7,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150 (1)	128,0-130,0 (125,0-133,0)	1190-1200*	600	120,0-124,0 (117,0-127,0)	100	130,0-150,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.84

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1170	15,2-17,8	-	-	-	ca. 19	100 300	min. 10,0 8,3-8,5	250 550 850 1150	1,0-1,2 3,4-3,7 4,9-5,3 7,7
ca. 65	11,4 4,0 1400	1190-1200 1240-1270 0-1,0				330-730				
						(3a)				

Torque control travel a mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104 F)		Rotational speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1150 (?)	132,0-134,0 (129,5-136,5)	1190-1200*	600	110,0-114,0 (107,0-117,0)	100	130,0-150,0 (126,0-154,0)	-	-	

Checking values in brackets

Testoil ISO 4113

* 1 mm less control rod travel than col 2

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
						(3a)				

Torque control travel a mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104 F)		Rotational speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 14,6 f
6. Edition

En

Testoil-ISO 4113

PE8P120A320LS3811

RQ 300/1150 PA 556

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes 10.82

company Daimler-Benz

engine OM 422 A

243 kW (330 PS)

Komb.-Nr. 0 401 848 734

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-5,15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	10,4 ± 0,1	16,2 - 16,4	0,4 (0,8)			
300	5,0-5,2	1,4 - 2,2	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	14,7-16,3	600	15,5	9,4 4,0	1195-1210 1225-1255	300	4,2	100 300 340-380=2,0 mm	min.6,0 4,1-4,2	-	-

Torque control travel
on flyweight assembly dimension a

mm

Speed regulation At

1195-1210 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /100 strokes
1	2	3	4	5	6	7
1150	162,0 - 164,0 (159,0 - 167,0)	-	600	152,0 - 158,0 (149,0 - 161,0)	100	125 - 145

Checking values in brackets

Test Specifications Fuel Injection Pumps ② and Governors

PE 10 P 110 A 320 LS 3818 RQ 300/1150 PA 437-2

supersedes 8.83

company Daimler-Benz

engine: OM 423

261 kW (355 PS)

Komb.-Nr. 0 401 849 705

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4
0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC) Δy 1. 10 ;

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,1+0,1	12,4 - 12,6	0,4 (0,8)			
300	7,9-8,1	1,2 - 2,0	0,4 (0,7)			
600	-	C, Sp. 4 u.5	(0,9)			
900						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10 rev/min 9		Torque control rev/min 11		Control rod travel mm 12	
600	13,0-14,0	600	13,5	10,1 4,0 1350	1190-1205 1225-1255 0 - 1,5	300	6,1	100 300 385-425	min. 7,7 6,0-6,2 = 2,0	1150	11,1+0,1	600	11,7+0,2
										900	11,6+0,2		

Torque-control travel on flyweight assembly dimension a = 0,2 mm Speed regulation: At 1190 - 1205 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6		Control rod travel mm 7	
1150	124,0-126,0 (121,5-128,5)	-		600	110,0-114,0 (107,0-117,0)	100	140,0-160,0 (136,0-164,0)		
				900	118,0-123,0 (115,0-126,0)				

Checking values in brackets

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 17,2 d

1. Edition

En

PE 8 P 120 A 920/5 LS 3827 RQV 300-900 PA 475-1
Komb.-Nr. 0 401 848 757

1-8-4-3-6-5-7-2 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes -

company: Fiat-IVECO

engine: 8280.22.201
309 kW

A. Fuel Injection Pump Settings

Port closing at prestroke $3,5-3,6$ mm (from BDC) RW=9,0-12,0 mm
(3,45-3,65)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	13,1+0,1	21,3-21,5	0,5(0,9)			
300	5,2-5,4	1,3-1,9	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	970	15,2-17,8	-	-	-	ca. 11	100	min. 6,8	300	1,6-1,7
ca. 61	12,1 4,0 1200	940-950 1045-1075 0-1,0				310-415	300	5,2-5,4	450	3,5-4,1
									750	5,1-6,4
									900	7,8

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed Limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 900	0,9 bar 213,0-215,0 (210,0-218,0)	940-950*	LDA 550	0,9 bar 231,0-237,0 (228,0-240,0)	100	170,0-190,0 (166,0-194,0)	-	-
			LDA 500	0 bar 129,0-131,0 (126,0-134,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

FIA 17,2 d

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 8 P..LS 3827 +RQV.. PA 475-1	0,90	0 0,44 0,33	13,1-13,2 9,3-9,4 12,2-12,3 9,9-10,3

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 19,9 d

2. Edition

En.

PE 6 ZW 150/120 RS 1007/11 RQU 250-350/1100 ZWA 43 DR

Komb.-Nr. 0 402 436 039

1 - 2 - 3 - 4 - 5 - 6

0 - 45-120-165-240-285⁰ $\pm 0,5^0$ ($\pm 0,75^0$)

Replaces

Firm: MTU

Engine: MB 6 V 331

Note VDT-W-400/305

Governor adjustment according to VDI-I-420/112

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke $\frac{2,50-2,60}{(2,45-2,65)}$ mm (from BD) 1. 6

Rotational speed min ¹	Control-rod travel mm ²	Fuel delivery Average value cm ³ /1000 strokes ³	Difference in fuel delivery cm ³ /1000 strokes ⁴	Fuel delivery Checking values cm ³ /1000 strokes ⁵	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees ¹	mm min ²	Control-rod travel mm min ³	Control lever deflection degrees ⁴	mm min ⁵	Control-rod travel mm ⁶	Control lever deflection degrees ⁷	mm min ⁸	Control-rod travel mm ⁹	mm min ¹⁰	Control-rod travel mm ¹¹
ca. 58	650	18,0-18,5	ca. 27	100	14,5-17,5	ca. 21	150	9,5-11,8	-	-
	1100	17,5-18,0		350	7,6-8,2		250	7,7-8,2		
	1150	13,7-16,0		650	1,8-2,4		400	2,2-4,5		
	1200	3,0-10,0		1000	1,8-2,4		530	0		
	1230	0 - 1,0		1150	0					

Torque control travel a = - mm

Speed regulation: At 1130-1140 min¹ less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min ¹	cm ³ /1000 strokes ²	min ³ Leerlauf	min ⁴	cm ³ /1000 strokes ⁵	min ⁶	cm ³ /1000 strokes ⁷
1100	18 mm RW	300 = 8,0 mm RW	-	-	100	18,0-18,2 mm RW
						Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

05.84

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 31,7 e
3. Edition

En.

PE 8 ZW 160/120 RS 1013/11 RQU 750 ZWA 57 R
Komb.- Nr. 0 402 438 018
1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je $45^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$

Replaces 03.84
Firm: MTU
Engine: MT 8 V 396

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke (2,45-2,65) mm (from BD) $\phi 1.8$

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Sleeve position 49,5 mm

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min ⁻¹ 2	Control-rod travel mm min ⁻¹ 3	Control lever deflection degrees 4	min ⁻¹ 5	Control-rod travel mm 6	Control lever deflection degrees 7	min ⁻¹ 8	Control-rod travel mm 9	min ⁻¹ 10	Control-rod travel mm 11
ca. 52	750	18,0	-	-	-	-	-	-	-	-
	720	25,6-30,6								
	750	17,0-19,0								
	770	6,8-11,8								
	780	0,5-8,0								
	800	0								

Torque control travel a = mm Speed regulation: At 760-765 min⁻¹ mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹ 1	cm ³ /1000 strokes 2	min ⁻¹ 3	Leerlaufanschl.	min ⁻¹ 4	cm ³ /1000 strokes 5	min ⁻¹ 6	cm ³ /1000 strokes 7
750	18 mm RW		12 mm RW	-	-	-	-

Checking values in brackets

06.84

Test specifications

Fuel injection pumps

and governors

WPP 001/4 MTU 29,9 a

11. Edition

En.

PE 8 ZWM 140/120 RS 19/11 RQU 375/1100 ZWA 25 DR
Komb.-Nr. 0 406 038 019

Replaces 12.83

Firm: MTU

Engine: MB 837 A a

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 ie $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Note VDT-W-Gen./7

Governor adjustment according to VDI-1-420/112

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

2,0-2,1
(1,95-2,15) mm (from BDC) Zyl. 8

Port closing at prestroke	Rotational speed	Control-rod travel	Fuel delivery	Difference in fuel delivery	Fuel delivery	Spring pre-tension (torque-control valve)
	min ' 1	mm 2	Average value cm ³ /1000 strokes 3	cm ³ /1000 strokes 4	Checking values cm ³ /1000 strokes 5	
	600	18,0	373,0-378,0	11,0 (16,0)	370,0-381,0	
	600	9,0	143,0-163,0	14,0 (21,0)	138,0-168,0	-
	200	9,0	71,0-91,0	14,0 (21,0)	66,0-96,0	
	1080	-	C, Sp. 2	8,0 (12,0)	C, Sp. 2	
	380			8,0		

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min ' 2	Control-rod travel mm min ' 3	Control lever deflection degrees 4	mm min ' 5	Control-rod travel mm 6	Control lever deflection degrees 7	mm min ' 8	Control-rod travel mm 9	mm min ' 10	Control-rod travel mm 11
max.	500	23,5-24,0				22	600	2,1-2,6	500	21,7-22,1
ca. 58	1100	19,0-19,5	(Position of slider)				150	12,0-14,0	700	20,9-21,5
	1130	15,0-18,0					250	10,4-12,4	1000	19,5-20,0
	1200	6,2-12,4					375	5,6-6,0	1100	19,0-19,5
	1250	0 - 7,8			1100	0,4-1,6	500	2,3-3,1		
	1350	0 - 1,0			1180	0	900	1,1-2,0		

Torque control travel a = $0,6 \pm 0,05$ mm Speed regulation: At 1120-1130 min⁻¹ less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop	Fuel-delivery characteristics		Starting fuel delivery	
min ' 1	cm ³ /1000 strokes 2	min ' 3	min ' 4	cm ³ /1000 strokes 5	min ' 6	cm ³ /1000 strokes 7
1080	232,0-236,0 (229,0-239,0)	1220 RW max. 5 mm	900	228,0-236,0 (224,0-240,0)	100	18,0-18,2 mm RW
			700	228,0-236,0 (224,0-240,0)		Butée de ralenti
			500	216,0-224,0 (212,0-228,0)	375	53,0-58,0

Checking values in brackets

06.84

* Limit the quantity at the excess-fuel stop.

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 13,8 b

1. Edition

En

PE 6 P 100/420 LS 89 RSV 250-1000 P 7/312 R

Komb.-Nr. 0 401 876 058

Note VDT-I-401/103

superseded

company KHD

engine F 6 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,0-2,1}{(1,95-2,15)}$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 68	1000	16,0	without auxiliary spring			ca. 28	300	6,0	980	0
	1050	9,0					100	19-21	450	0
	1080	4,0					300	5,7-6,3	340	1,2-1,8
2a	1050	7,0-10,0	with auxiliary spring				350	3,2-4,5		
	1100	1,5-3,8					450	0-1,0		
	1180	0-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Take	from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

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G8

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Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,9a 9

4. Edition

En

Testoil-ISO 4113

VA 4/100 H 1050 BR 12 0 460 304 048
BR 12-3 0 460 304 049
BR 12-7 0 460 304 142

supersede 6.82
company IHC
engine XDD 239

DHK:1 688 901 020

Pre-stroke setting 0,5 mm
Setting of the pointer at a stroke of 1 mm in
relation to outlet "A".

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Instructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge air press kp/cm ²	Difference in delivery cm ³
1 1 Timing device travel	600	8,1-9,1 mm		
1 2 Supply pump pressure	600	4,5-5,0 kp/cm ²		
1 3 Full load delivery without charge air pressure	800	64,0-65,0 cm ³ /1000 strokes		2,5
Full load delivery with charge air pressure	--	-- cm ³ /1000 strokes		
1 4 Idle speed regulation	250	17,5-23,5 cm ³ /1000 strokes		3,0
1 5 Start	100	mind. 85 cm ³ /1000 strokes		
1 6 Full load speed regulation	1100	41,0-49,0 cm ³ /1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min mm	150-300 Beginn	600 (7,8-9,4)	830-980 13,7-14,4 (13,4-14,7)
2 2 Supply pump	rev/min kp/cm ²	100 1,6-2,1 (1,4-2,3)	600 (4,2-5,2)	1050 6,2-6,7 (6,0-6,9)
Overflow delivery	rev/min cm ³ /10 s	500 mind. 25		1000 55-125 (40-140)

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge air pressure kp/cm ²
End stop	Full	1110-1160	0	
		1100	(40,0-50,0)	
		1030	66,0-69,0 (65,0-70,0)	
		800	(63,5-65,5)	
		500	57,0-60,0 (56,0-61,0)	
	Stop	1050	0	
Idle stop	Full	310-360	0	
		250	(16,5-24,5)	
		100	mind. 85	
End stop	Start	mind. 150		

8.84

G9

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = 0,5 mm Dimension V = - mm Maß I = 7,0 mm Maß II = 14,0 mm Maß III = 35,8 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,5 e 6

1. Edition

En

VA 4/100 H 1200 CR 12-11
0 460 304 204
DHK: 1 688 901 020

supersedes
IHC
company D 206
engine

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Instructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting $0,5 \text{ mm} \pm 0,02(0,04)$
Setting of the pointer at a stroke of 1 mm in
relation to outlet "A".

1. Settings	rev/min	Settings	Charge air press kp/cm ²	Difference in delivery cm ³
1 1 Timing device travel	800	2,5-3,5 mm		
1 2 Supply pump pressure	800	4,5-5,0 kp/cm ²		
1 3 Full load delivery without charge air pressure	800	61,5-62,5 cm ³ /1000 strokes		
Full load delivery with charge air pressure	-	cm ³ /1000 strokes		
1 4 Idle speed regulation	370	12,0-18,0 cm ³ /1000 strokes		
1 5 Start	100	min. 90 cm ³ /1000 strokes		
1 6 Full load speed regulation	1300	21,0-29,0 cm ³ /1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	350-500	600	800	1020-1170
	mm	Beginn	0,9-1,9(0,6-2,2)	(2,2-3,8)	4,7-5,4(4,4-5,7)
2 2 Supply pump	rev/min	200	800	1200	
	kp/cm ²	1,4-1,9(1,2-2,1)	(4,3-5,2)	6,1-6,6(5,9-6,8)	
Overflow delivery	rev/min	500		1200	
	cm ³ /10 s	55-100(40-110)		55-100(40-110)	

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge air pressure kp/cm ²
End stop	Full	1330-1380	0	
		1300	21,0-29,0 (20,0-30,0)	
		1170	66,5-69,5 (65,5-70,5)	
		800	(60,0-63,0)	
		500	54,5-57,5 (53,5-58,5)	
	Stop	1200	0	
Idle stop	Full	420-500	0	
		370	(11,0-19,0)	
	Start	100	min. 90	
		220-300		

8.84

G11

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Angle to the stop plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump Dimension Φ 2,0 mm Dimension ∇ 24,65 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8m 1

2. Edition

En

ISO-ISO 4113

VA 6/10 H 1100 CR 87-2
0 460 306 248

DHK 1 688 901 020 / 172+3 bar

supersedes 10.79

company IHC

engine D 358

Pre-stroke setting 0 mm
Setting of the pointer at a stroke of 1 mm in
relation to outlet "A".

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Instructions and Test Equipment
VDT WPP 161/4 B
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	700	3,8-4,6 mm		
1.2 Supply pump pressure	700	4,8-5,3 kp/cm ²		
1.3 Full load delivery without charge air pressure	800	67,5-68,5 cm ³ /1000 strokes		2,5
Full load delivery with charge air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle speed regulation	400	9,5-15,5 cm ³ /1000 strokes		3,0
1.5 Start 196 bar	100	mind. 80,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	1150	33,5-41,5 cm ³ /1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400	700	800-950
	mm	0,8-1,8 (0,5-2,1)	(3,5-4,9)	5,2-5,9 (4,9-6,2)
2.2 Supply pump	rev/min	200	700	1100
	kp/cm ²	2,2-2,7 (2,0-2,9)	(4,6-5,5)	6,2-6,7 (6,0-6,9)
Overflow delivery	rev/min	500		1100
	cm ³ /10 s	55-100 (40-110)		55-100 (40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge air pressure kp/cm ²
End stop	Full	1190-1240 (1170-1260)	0	
		1150	(32,5-42,5)	
		1050	68,0-71,0 (67,0-72,0)	
		800	(67,0-69,0)	
		500	66,0-70,0 (65,0-71,0)	
	Stop	1100	0	
Idle stop	Full	480-530 (460-550)	0	
		400	(8,5-16,5)	
		100	mind. 80,0	
End stop		220-320		

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = 3,00 mm Dimension V = 24,65 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 4,4 p

1. Edition

En

VA 4/11 H 1200 CR 93-3

0 460 314 047

048

DHK: 1 688 901 020

supersedes

company IHC

engine D 268

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Instructions and Test Equipment
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre stroke setting 0.5 mm ± 0.02 (0.04)
Setting of the pointer at a stroke of 1 mm in
relation to outlet "A".

1. Settings	rev/min	Settings	Charge air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	700	5,0-5,8 mm		
1.2 Supply pump pressure	700	4,7-5,2 kp/cm ²		
1.3 Full load delivery without charge air pressure	800	80,0-81,0 cm ³ /1000 strokes		3,0
Full load delivery with charge air pressure	-	cm ³ /1000 strokes		
1.4 Idle speed regulation	350	14,0-20,0 cm ³ /1000 strokes		3,0
1.5 Start	100	min. 95 cm ³ /1000 strokes		
1.6 Full load speed regulation	1250	41,0-49,0 cm ³ /1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400	700	800
	mm	0,7-1,7(0,4-2,0)	(4,7-6,1)	6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min	200	700	1100
	kp/cm ²	1,7-2,2(1,5-2,4)	(4,5-5,4)	6,3-6,8(6,1-7,0)
Overflow delivery	rev/min	500	1200	
	cm ³ /10 s	55-100(40-110)	55-100(40-110)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge air pressure kp/cm ²
End stop	Full	1290-1350	0	
		1250	(40,0-50,0)	
		1100	85,0-88,0 (84,0-89,0)	
		800	(79,5-81,5)	
		500	78,5-81,5 (77,5-82,5)	
	Stop	1200	0	
Idle stop	Full	420-470	0	
		350	(13,0-21,0)	
	Start	100	min. 95	
		220-340		

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8.84

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 36 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump Dimension \bar{r}_v 1,6 mm Dimension φ 24,65 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 5,2 a 6

2. Edition

En

VA 6/100 H 1450 CR 124-3
0 460 306 139

supersedes

company **Saviem**
engine **797-10 LKW SM 8 T**

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers

Test Instructions and Test Equipment
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre stroke setting $0.2 \pm 0.02 (\pm 0.04)$ mm
Setting of the pointer at a stroke of 0.3 mm in
relation to outlet "A".

1. Settings	rev/min	Settings	Charge air press kp/cm ²	Difference in delivery cm ³
1 1 Timing device travel	1100	3,9-4,7 mm		
1 2 Supply pump pressure	1100	5,9-6,4 kp/cm ²		
1 3 Full load delivery without charge air pressure	900	59,5-60,5 cm ³ /1000 strokes		3,0
Full load delivery with charge air pressure	-	- cm ³ /1000 strokes		
1 4 Idle speed regulation	300	7,0-13,0 cm ³ /1000 strokes		2,5
1 5 Start	100	mind. 80,0 cm ³ /1000 strokes		
1 6 Full load speed regulation	1600	13,0-19,0 cm ³ /1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min mm	800 0,4-1,4 (0,2-1,6)	1100 (3,6-5,0)	1450 7,0-7,7 (6,6-8,0)
2 2 Supply pump	rev/min kp/cm ²	200 1,3-1,8 (1,1-2,0)	1100 (5,7-6,6)	1450 7,3-7,8 (7,1-8,0)
Overflow delivery	rev/min cm ³ /10 s	500 55-100 (40-110)		1450 55-100 (40-110)

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge air pressure kp/cm ²
End stop	Full	1600-1700	0	
		1600	(12,0-20,0)	
		1500	53,0-59,0 (52,0-60,0)	
		1400	59,0-62,0 (58,0-63,0)	
		900	(59,0-61,0)	
		500	55,0-59,0 (54,0-60,0)	
	Stop	1400	0	
Idle stop	Full	350-450	0	
		300	(6,0-14,0)	
		100	mind. 80,0	
End stop	Start	150-250		

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7.84

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Angle to the stop plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension \overline{IV} 5,6 mm Dimension \overline{V} 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 4,0e

4. Edition
En

VA 4/90 H 1200 CR 144-2
0 460 394 042

supersedes --

company **Steyr**

engine **WD 411.41**

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Instructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting **0,3 mm ± 0,02 (± 0,04)**

1. Settings	rev/min	Settings	Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	1000	3,9-4,7 mm		
1.2 Supply pump pressure	1000	5,1-5,6 kp/cm ²		
1.3 Full load delivery without charge-air pressure	900	55,5-57,5 cm ³ /1000 strokes		2,5
Full load delivery with charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle speed regulation	300	13,0-19,0 cm ³ /1000 strokes		3,0
1.5 Start	100	mind. 70,0 cm ³ /1000 strokes		
1.6 Full load speed regulation	1280	23,0-31,0 cm ³ /1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	700	1000	1200
	mm	0,8-1,8(0,5-2,1)	(3,6-5,0)	5,8-6,6(5,5-6,9)
2.2 Supply pump	rev/min	200	1000	1200
	kp/cm ²	1,2-1,7(1,0-1,9)	(4,9-5,8)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500		1200
	cm ³ /10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge-air pressure kp/cm ²
End stop	Full	1330-1380	0	
		1280	(22,0-32,0)	
		1150	59,5-60,5 (59,0-61,0)	
		900	(54,5-58,5)	
		500	48,5-51,5 (47,5-52,5)	
	Stop	1200	0	
Idle stop	Full	420-470	0	
		300	(12,0-20,0)	
		100	mind. 70,0	
End stop		170-250		

G19

BOSCH

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7.84

Angle to the stop plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = 4,60 mm Dimension V = 24,65 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 3,1a

3. Edition

En

VA 4/100 H 1200 CR 145-4
0 460 304 237

supersedes
company **Steyr**
engine **WD 408.43**

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Instructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Pre stroke setting **0,3 mm ± 0,02 (± 0,04)**

Testbenches 413

1. Settings	rev/min	Settings	Charge air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	1000	3,4-4,2 mm		
1.2 Supply pump pressure	1000	4,7-5,2 kp/cm ²		
1.3 Full load delivery without charge air pressure	1180	65,0-66,0 cm ³ /1000 strokes		2,5
Full load delivery with charge air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle speed regulation	250	12,0-18,0 cm ³ /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm ³ /1000 strokes		
1.6 Full load speed regulation	1270	36,0-44,0 cm ³ /1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	480-630 (450-660)	1000	1140-1300
	mm	Beginn	(3,1-4,5)	5,1-5,8 (4,8-6,1)
2.2 Supply pump	rev/min	200	1000	1200
	kp/cm ²	1,2-1,7 (1,0-1,9)	(4,5-5,4)	5,5-6,0 (5,3-6,2)
Overflow delivery	rev/min	500		1200
	cm ³ /10 s	55-100 (40-110)		55-100 (40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge air pressure kp/cm ²
End stop	Full	1320-1370	0	
		1270	(35,0-45,0)	
		1180	(64,5-66,5)	
		900	69,0-71,0 (68,0-72,0)	
		500	62,0-65,0 (61,0-66,0)	
	Stop	1200	0	
Idle stop	Full	330-380	0	
		250	(11,0-19,0)	
		100	mind. 80,0	
End stop		170-250		

G21

7.84

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Angle to the stop plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension \bar{IV} 3,40 mm Dimension \bar{V} 24,65 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 4,0d

4. Edition

En

Testoil-ISO 4113

VA 4/10 H 1200 CR 145-5
0 460 304 246

supersedes —
company **Steyr**
engine **WD 411.85**

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Instructions and Test Equipment
VDI WPP 161/4 B
Pre setting see reverse side

Pre stroke setting **0,3 mm ± 0,02 (± 0,04)**

1. Settings	rev/min	Settings	Charge air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	1000	5,7-6,5 mm		
1.2 Supply pump pressure	1000	5,0-5,5 kp/cm ²		
1.3 Full load delivery without charge air pressure	1180	68,0-69,0 cm ³ /1000 strokes		2,5
Full load delivery with charge air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle speed regulation	350	10,0-16,0 cm ³ /1000 strokes		3,0
1.5 Start	100	mind. 70,0 cm ³ /1000 strokes		
1.6 Full load speed regulation	1280	31,0-39,0 cm ³ /1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	600	1000	1200
	mm	1,4-2,2 (1,1-2,5)	(5,4-6,8)	7,7-8,4 (7,3-8,7)
2.2 Supply pump	rev/min	200	1000	1200
	kp/cm ²	1,1-1,6 (0,9-1,8)	(4,8-5,7)	5,8-6,3 (5,6-6,5)
Overflow delivery	rev/min	500		1200
	cm ³ /10 s	55-100 (40-110)		55-100 (40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge air pressure kp/cm ²
End stop	Full	1330-1380	0	
		1280	(30,0-40,0)	
		1180	(67,5-69,5)	
		1000	71,5-73,5 (70,5-74,5)	
		500	62,5-65,5 (61,5-66,5)	
	Stop	1200	0	
Idle stop	Full	470-530	0	
		350	(9,0-17,0)	
		100	mind. 70,0	
End stop		170-250		

G23

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 36 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV= 4,00 mm Dimension V= 24,65 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 PEU 2,1 d

3. Edition

En

EP/VA 4/90 H 2250 CR 173 (Z)
173 - 1 (Z)
173 - 2 (Z)

supersedes 4.78
company Peugeot
engine XD 4/90

Quiet-running device (see VDT-WPP 161/4, Suppl. 1)
1. Edition

Pre-stroke setting mm

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Instructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	2000	5,3-5,7 mm		
1.2 Supply pump pressure	2000	5,6-6,1 kp/cm ²		
1.3 Full-load delivery without charge-air pressure	1400	36,0-37,0 cm ³ /1000 strokes		1,5
Full-load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
1.4 Idle speed regulation	320	10,0-14,0 cm ³ /1000 strokes		3,0
1.5 Start	50	60-100 cm ³ /1000 strokes		
1.6 Full-load speed regulation	2310	17,0-23,0 cm ³ /1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	1000	1600	2200-2400 (2170-2430)
	mm	0,6-1,6 (0,3-1,9)	3,0-4,0 (2,7-4,3)	end (6,9-7,6)
2.2 Supply pump	rev/min	200		2000
	kp/cm ²	1,0-1,5 (0,8-1,7)		(5,4-6,3)
Overflow delivery	rev/min	500		2150
	cm ³ /10 s	70-140 (60-150)		70-140 (60-150)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge-air pressure kp/cm ²
End stop	Full	2330-2370		
		2310	10,0	
			17,0-23,0 (15,0-25,0)	
		2150	32,7-35,7 (31,7-36,7)	
		1400	(35,5-37,5)	
		800	28,5-31,5 (27,5-32,5)	
		500	31,1-34,1 (30,0-35,0)	
	Stop	2250	0	
Idle stop	Full	430-570	0	
		320	(8,0-16,0)	
		50	(50-120)	
	Start	300	max. 31,0	

5.84

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 50 \pm 4^\circ$ $\beta = 52 \pm 5^\circ$ $\gamma = 10 \pm 2^\circ$ $\delta = \max 50^\circ$	Pump Dimension IV 1,0 Dimension 25,0

173-1 Test as 173, but play between lever 173-2 and stop for increased idle = 5.5 - 2.0 mm.

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 PER 5,8 o
1. Edition

En

Testo: ISO 4113

VA6/11H 1300 CL 179-2

0 460 316 038

DHK: 1688 901 020

Pre-stroke setting $0,3 \pm 0,02(0,04)$ mm
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

supersedes
company Perkins
16 354
engine

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Instructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge air press kp/cm ²	Difference in delivery cm ³
1 1 Timing device travel	500	4,4-5,0 mm	0	
1 2 Supply pump pressure	500	4,5-5,0 kp/cm ²	0	
1 3 Full load delivery without charge air pressure	500	80,0-81,0 cm ³ /1000 strokes	0	
Full load delivery with charge air pressure	1300	96,0-97,0 cm ³ /1000 strokes	0,7	
1 4 Idle speed regulation	250	19,0-25,0 cm ³ /1000 strokes	0	
	100	min. 100 cm ³ /1000 strokes	0	
1 5 Start				
1 6 Full load speed regulation	1550	36,0-44,0 cm ³ /1000 strokes	0,7	

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	500	650	680-780
	mm	1,0-2,0(0,7-2,3) (4,1-5,3)	6,0-7,0 (5,7-7,3)	7,0-7,7 (6,7-8,0)
2 2 Supply pump	rev/min	200	500	1300
	kp/cm ²	2,5-3,0(2,3-3,2)	(4,3-5,2)	6,8-7,3 (6,6-7,5)
Overflow delivery	rev/min	500		1300
	cm ³ /10 s	55-100 (40-110)		55-100 (40-110)

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge air pressure kp/cm ²
End stop	Full	1600	max. 15,0	0,7
		1550	(35,0-45,0)	0,7
		1300	(95,5-97,5)	0,7
		1100	93,5-95,5(92,5-96,5)	0,7
		500	84,5-88,5(83,5-89,5)	0,3
		500	(79,5-81,5)	0
Idle stop	Full	1300	0	
	Start	330,380	0	
		250	(18,0-26,0)	
		100	min. 100	
		100-200		

H3

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV Dimension V = 25,0mm

LDA

Start of timing advance 0,13 - 0,26 bar

End of timing advance 0,31 - 0,37 bar

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8 V 7

1. Edition

Testoil-ISO 4113

VA 6/10 H 1100 CR 401-3

0 460 306 262

DHK: 1 688 901 020

supersedes

company **IHC**

engine **D 358/956**

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers

Test Instructions and Test Equipment

VDI-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting **0** mm See VDT-WJP 161/4, Suppl. 1)
Setting of the pointer at a stroke of 1 mm in
relation to outlet "A".

1. Settings	rev/min	Settings	Charge-air press kp/cm ²	Difference in delivery cm ³
1 1 Timing device travel	800	2,4-3,0 mm		
1 2 Supply pump pressure	800	5,0-5,6 kp/cm ²		
1 3 Full load delivery without charge air pressure	800	67,2-68,2 cm ³ /1000 strokes		3,0
Full load delivery with charge air pressure	-	- cm ³ /1000 strokes		
1 4 Idle speed regulation	350	15,0-21,0 cm ³ /1000 strokes		2,5
1 5 Start	100	min. 80 cm ³ /1000 strokes		
1 6 Full load speed regulation	1150	34,0-40,0 cm ³ /1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	600	800	1000	1100
	mm	0,8-1,6(0,5-1,9) (2,0-3,4) 3,7-4,3(3,3-4,7) 3,8-4,5(3,5-4,8)			
2 2 Supply pump	rev/min	200	800	1100	
	kp/cm ²	1,7-2,3(1,5-2,5) (4,8-5,8) 5,9-6,5(5,7-6,7)			
Overflow delivery	rev/min	500	1100		
	cm ³ /10 s	55-100(40-110) 55-100(40-110)			

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge-air pressure kp/cm ²
End stop	Full	1190-1240	0	
		1150	(33,0-41,0)	
		1080	65,5-68,5 (64,5-69,5)	
		800	(66,7-68,7)	
		500	67,0-70 (66,0-71,0)	
	Stop	1100	0	
Idle stop	Full	520-580	0	
		350	(14,0-22,0)	
	Start	100	min. 80	
End stop		260-360		

H5

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 50 + 8^\circ$	Pump Dimension \bar{l} 3,0 mm Dimension \bar{v} 24,65 mm

Test Specifications Distributor-Type Fuel Injection Pump

En

46

WPP 001/4 IHC 5,8 V 6

1. Edition

Testoil-ISO 4113

VA 6/10 H 1150 CR 401-4

O 460 306 264

DHK: 1 688 901 020

supersedes

company IHC

engine D 358/1056

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers

Test Instructions and Test Equipment
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0 mm See VDT-WJP 161/4, Suppl. 1)
Setting of the pointer at a stroke of 1 mm in
relation to outlet "A".

1. Settings	rev/min	Settings	Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	800	2,4-3,0 mm		
1.2 Supply pump pressure	800	4,8-5,4 kp/cm ²		
1.3 Full load delivery without charge-air pressure	800	70,5-71,5 cm ³ /1000 strokes		3,0
Full load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
1.4 Idle speed regulation	350	15,0-21,0 cm ³ /1000 strokes		2,5
1.5 Start	100	min. 80 cm ³ /1000 strokes		
1.6 Full load speed regulation	1200	38,5-44,5 cm ³ /1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	600	800	1000	1150
	mm	0,9-1,7(0,6-2,0) (2,0-3,4) 3,7-4,3(3,3-4,7) 3,8-4,5(3,4-4,8)			
2.2 Supply pump	rev/min	200	800	1150	
	kp/cm ²	1,7-2,3(1,5-2,5) (4,6-5,6) 6,0-6,6(5,8-6,8)			
Overflow delivery	rev/min	500	1150		
	cm ³ /10 s	55-100(40-110) 55-100(40-110)			

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge-air pressure kp/cm ²
End stop	Full	1240-1300	0	
		1200	(37,5-45,5)	
		1130	70,0-73,0 (69,0-74,0)	
		800	(70,0-72,0)	
		500	71,5-74,5 (70,5-76,0)	
	Stop	1150	0	
Idle stop	Full	510-570	0	
		350	(14,0-22,0)	
	Start	100	min. 80	
End stop		260-360		

H7

7.84

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H7

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 4^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump Dimension IV $= 2,8 \text{ mm}$ Dimension V $= 24,65 \text{ mm}$

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 Volvo 3,6 n

2. Edition

En

VE 6/11 F 1800 L 18-3 Overflow temperature 45° C

0 460 416 027

supersedes 3.84
company: Volvo
engine: TD 40 A (93 kW)

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm 0,02 (0,04)

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1500	3,6-4,0 mm	0,75	2,5(3,0)
1 2 Supply-pump pressure	1500	6,6-7,2 bar (kgf/cm ²)	0,75	
1 3 Full-load delivery with charge-air pressure	500	43,5-45,5 cm ³ /1000 strokes	0	
Full-load delivery without charge-air pressure	1500	62,0-63,0 cm ³ /1000 strokes	0,75	
1 4 Idle regulation	325	8,0-12,0 cm ³ /1000 strokes	0	
1 5 Full-speed regulation	100	min. 60,0 cm ³ /1000 strokes	0	
1 6 Start	2000	19,0-25,0 cm ³ /1000 strokes	0,75	
1 7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min	1100	1500	1800
LDA=0,75 bar	mm	1,6-2,4 (1,3-2,7)	(3,1-4,5)	4,5-5,3 (4,2-5,6)
2 2 Supply pump	n = rev/min	400	1800	
LDA=0,75 bar	bar (kgf/cm ²)	2,8-3,4	7,7-8,3	
Overflow delivery	n = rev/min	500	1800	
	cm ³ /10 s	55-138 (40-153)	55-138 (40-153)	

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2100	max. 2,0	0,75
	2000	(17,0-27,0)	0,75
	1900	39,0-49,0 (39,0-49,0)	0,75
	1800	56,3-59,3 (55,55-60,05)	0,75
	1500	(60,25-64,75)	0,75
	*500	50,0-52,0 (48,25-53,75)	0,23
	500	(41,75-47,25)	0
switch-off			
Idle stop	400	max. 3,0	
	325	(6,0-14,0)	
End stop	110	min. 60	
	220	max. 40	

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,9-6,2
MS	1,2-1,4
SVS	max. 4,7
AXK	20,2-22,2
^B XL	10,4-16,4

Observations

*Manifold-pressure
compensator stroke
= 4,0 mm

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP001/4 VMA 2,0 d

1. Edition

En

VE 4/9 F 2150 L31-1

Overflow temperature 45° C

supersedes

company: Motori VM

engine: HR 488 HT

0 460 494 133

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1900	6,4-6,8 mm	0,8	
1 2 Supply-pump pressure	1900	5,7-6,3 bar (kgf/cm ²)	0,8	
1 3 Full load delivery with charge air pressure	1600	46,5-47,5 cm ³ /1000 strokes	0,8	3,0
Full load delivery without charge air pressure	1600	34,5-35,5 cm ³ /1000 strokes	0	
1 4 Idle regulation	400	8,0-12,0 cm ³ /1000 strokes	0	3,0
1 5 Full speed regulation	2300	27,5-33,5 cm ³ /1000 strokes	0,8	
1 6 Start	100	min. 44,0 cm ³ /1000 strokes	0	
1 7 Load dependent port closing	-			

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	1000 1,3-2,1 (1,0-2,4)	1900 (5,9-7,3)	2150 7,5-8,3 (7,2-8,6)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,0-2,6	2150 6,3-6,9	
Overflow delivery	n = rev/min cm ³ /10 s			

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	2600	max. 2,0	0,8
	2450	max. 10,0	0,8
	2300	(26,5-34,5)	0,8
	2150	40,0-43,0 (39,2-43,8)	0,8
	1600	(44,7-49,3)	0,8
	1600	(32,7-37,3)	0
	* 600	38,3-41,3 (36,8-42,8)	0,27
	600	30,5-33,5 (29,0-35,0)	0
switch-off			
Idle stop	800	max. 2,0	
	500	max. 6,0	
	400	(6,0-14,0)	
End stop	350	min. 44	
	450	max. 43	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,3
KF	5,7-5,9
MS	0,7-0,9
SVS	5,6
A	
B	

Observations

*Manifold-pressure
compensator stroke
= 3,8 mm

2 4 Solenoid

max cut-in voltage xxx min. 10 V
test voltage xxx rated voltage 12V.

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8.84

H10

H10

Test Specifications Distributor-type Fuel-injection Pumps

En

Overflow temperature 45° C
VE 4/9 F 2300 R 54 0 460 494 044

supersedes 9.83
company: Fiat
engine: X8/28

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/.

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1500	4,3-4,7 mm		
1 2 Supply-pump pressure	1500	5,1-5,7 bar (kgf/cm ²)		
1 3 Full-load delivery with charge-air pressure		cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1500	34,2 - 35,2 cm ³ /1000 strokes		2,5 (3,0)
1 4 Idle regulation	350	8,0-12,0 cm ³ /1000 strokes		2,5 (3,0)
1 5 Full-speed regulation	2400	16,0-22,0 cm ³ /1000 strokes		
1 6 Start	100	min. 48 cm ³ /1000 strokes		
1 7 Load-dependent port-closing	1500	-		

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	800 1,7-2,5 (1,4-2,8)	1500 (3,8-5,2)	2300 7,2-8,0 (6,9-8,3)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,5-3,1		2300 6,9-7,5
Overflow delivery	n = rev/min cm ³ /10 s	400 55-138(40-153)		2300 55-138(40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2500	4,5-10,5 (3,5-11,5)	
	2400	(15,0-23,0)	
	2250	28,0-30,0(26,7-31,3)	
	1500	(32,4-37,0)	
	600	23,5-26,5(22,0-28,0)	
switch-off	2300	0	
Idle stop	350	(6,0-14,0)	
	400	max. 4,0	
	540	0	
2 4 Solenoid	max. cut-in voltage xxx min. 10 V test voltage xxx rated voltage 12V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,7-1,9
SVS	max. 3,5
XAK	20,1-22,1
X ^B L	9,5-13,3
Observations	

Test ISO 4113

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP001/4 MAN 5,6 p

1. Edition

En

VE6/11F 1100 R55-8

Overflow temperature 45° C

0 460 416 037

 supersedes
company:
engine:

 MAN
DO 226 ME

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm -0,02 (0,04)

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	700	2,9-3,3 mm		
1 2 Supply-pump pressure	700	3,9-4,5 bar (kgf/cm ²)		
1 3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	700	69,0-70,0 cm ³ /1000 strokes		3,5 (4,0)
1 4 Idle regulation	300	2,5-6,5 cm ³ /1000 strokes		3,0 (4,0)
1 5 Full-speed regulation	1250	19,0-25,0 cm ³ /1000 strokes		
1 6 Start	100	75,0-105,0 cm ³ /1000 strokes		
1 7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	500 0,9-1,7 (0,6-2,0)	700 (2,4-3,8)	900 4,0-4,8 (3,7-5,1)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,9-3,5		1100 5,7-6,3
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)		1100 55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1330 1250 1100 900 700 500	max. 1,5 (17,5-26,5) 75,5-78,5 (74,4-79,6) 73,5-76,5 (72,4-77,6) (66,9-72,1) 64,0-68,0 (62,6-69,4)	
switch-off			
Idle stop	340 300	max. 1,5 (0-9,0)	
End stop	350 450	min. 80 max. 80	
2 4 Solenoid	max. cut-in voltage XX min. 10 V rated voltage 12V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,7-5,9
MS	1,2-1,4
SVS	2,5
A	
B	

Observations

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8.84

H12

H42

Test Specifications

Distributor-type

Fuel-injection Pumps

VE 6/12 F 1350 R 64
0 460 426 016

superseded 3.83
Nozzle-and-holder assembly company IHC
1 688 901 020 (172 + 3 bar) engine: D 358/PC 11

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting - mm Setting of the pointer at a stroke of 1 mm in relation to outlet "A". see VDT-W-460/

1. Settings	Rot speed rev/min	Settings	Charge-air press bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1150	5,2-5,6 mm		
1 2 Supply pump pressure	1150	5,6-6,2 bar (kgf/cm ²)		
1 3 Full-load delivery without charge-air pressure	-	- cm ³ /1000 strokes		
Full-load delivery with charge-air pressure	1150	84,0-85,0 cm ³ /1000 strokes		3,5 (4,5)
1 4 Idle speed regulation	500	14,5-20,5 cm ³ /1000 strokes		3,5 (4,5)
1 5 Start	1400	44,0-50,0 cm ³ /1000 strokes		
1 6 Full load speed regulation	100	min. 100,0 cm ³ /1000 strokes		
1 7 Load-dependent start of delivery	-	-		

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	600 1,6-2,4 (1,3-2,7)	1150 (4,7-6,1)	1300 5,3-6,1 (5,0-6,4)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,7-3,3		1300 6,0-6,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-163)		1350 55-138 (40-158)

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	1510 1450 1400 1300 1150 800 500	max. 1,0 9,0-17,0 (8,0-18,0) (42,0-52,0) 80,0-83,0 (78,5-84,5) (81,5-87,5) 77,0-81,0 (76,0-82,0) 63,0-68,0 (61,8-69,2)	
switch-off	1350	0	
Idle stop	570 520 500	max. 1,0 min. 4,0 (12,5-22,5)	
End stop	250 350	min. 100 max. 80	
2 4 Solenoid	max. cut-in voltage test voltage	xxx min. 10 V rated voltage 12V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,0-1,2
SVS	max. 6,0
A XK	20,2-22,2
B XL	15,8-19,8

Observations

Testoil-ISO 4113

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VWV 1.6 h

4. Edition

En

VE 4/9 F 2250 R 78

Overflow temperature 45° C

0 460 494 062/063

supersedes 11.82

company: VWV

engine: 086T-1,6

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1500	3,8-4,2 mm	0,75	
1 2 Supply-pump pressure	1500	5,6-6,1 bar (kgf/cm ²)	0,75	
1 3 Full-load delivery with charge-air pressure	600	23,5-24,5 cm ³ /1000 strokes	0	
Full-load delivery without charge-air pressure	1500	43,5-44,5 cm ³ /1000 strokes	0,75	2,5 (3,0)
1 4 Idle regulation	475	7,0-11,0 cm ³ /1000 strokes	0	2,5 (3,0)
1 5 Full-speed regulation	100	min. 38,0 cm ³ /1000 strokes	0	
1 6 Start	2525	9,0-15,0 cm ³ /1000 strokes	0,75	
1 7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min	1000	1500	2250
LD=0,75 bar	mm	1,8-2,6 (1,5-2,9)	(3,3-4,7)	6,1-6,9 (5,8-7,2)
2 2 Supply pump	n = rev/min	600		2250
LD=0,75 bar	bar (kgf/cm ²)	3,3-3,9		7,4-8,0
Overflow delivery	n = rev/min	600		2250
	cm ³ /10 s	55-125 (40-140)		55-125 (40-140)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2730-1870	0	0,75
	2525	(8,0-16,0)	0,75
	2250	38,5-40,5 (37,2-41,8)	0,75
	1500	(41,7-46,3)	0,75
* 1000		33,5-34,5 (31,0-37,0)	0,3
600		(21,0-27,0)	0
switch-off			
mech.	2250	0	
elektr.	400	0	
Idle stop	1200	max. 5,0	
	475	(5,0-13,0)	
End stop	400	min. 22,0	
	500	max. 30,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	4,4
A XK	18,4-20,4
B XL	10,0-13,6

Observations

Manifold-pressure
compensator stroke
= 4,0 mm
Correction at the
adjusting nut. (46)

2 4 Solenoid	max. cut-in voltage xxx min. 10 V
	test voltage xxxxxxxx rated voltage 12V.

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7.84

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 Ope 1,6 d

5. Edition

En

2.84

supersedes

Ope1

company:

2033-1,6 1

engine:

VE 4/9 F 2300 R 82; VE ...R 82-1

0 460 494 071

0 460 494 114

Overflow temperature 45° C

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings	Charge-air press bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,1 - 3,5 mm		
1.2 Supply-pump pressure	1500	5,0 - 5,6 bar (kgf/cm ²)		2,5
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1500	28,5-29,5 cm ³ /1000 strokes		2,5
1.4 Idle regulation	450	6,0 - 10,0 cm ³ /1000 strokes		
1.5 Full-speed regulation	2785	7,0 - 13,0 cm ³ /1000 strokes		
1.6 Start	100	min. 40,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	★ ★			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1200 1,4-2,2 (1,1 - 2,5)	1500 (2,6 - 4,0)	2300 6,8-7,6 (6,5 - 7,9)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,4 - 3,0		2300 7,3 - 7,9
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40 - 153)		2300 55-138 (40 - 153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	3000 2785 2625 2300 1500 600	max. 5,0 7,0 - 13,0 (6,0 - 14,0) (16,0-24,0) 27,4-29,4 (26,1-30,7) (26,7-31,3) 23,2-26,2 (21,7-27,7)	
switch-off	2300	0	
Idle stop	1200 650 450	0 2,0 - 7,0 (0,5-8,5) (4,0 - 12,0)	
End stop	400 500	min. 30 max. 28	
2.4 Solenoid	max. cut-in voltage 100 kV/cm ² XXX	xx min. 10 V rated voltage 12V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2 - 3,4
KF	5,7 - 5,9
MS	1,2 - 1,4
SVS	max. 2,0
*FH	1,8-2,4
A XK	22,3 - 24,3
B XL	11,0 - 14,9

Observations

*operating
stroke (KSB)
Note VDT-I-460/138

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 STE 4,0 h

1. Edition

En

VE 4/11 F 110OR 94-1
0 460 414 011

Overflow temperature 45° C

supersedes
company Steyr
engine WD 411.89

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1000	5,2 - 5,6 mm		
1 2 Supply pump pressure	1000	5,2 - 5,8 bar (kgf/cm ²)		
1 3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1000	73,5 - 74,5 cm ³ /1000 strokes		3,0 (4,0)
1 4 Idle regulation	300	11,5- 15,5 cm ³ /1000 strokes		3,0 (4,0)
1 5 Full-speed regulation	1150	50,0 - 56,0 cm ³ /1000 strokes		
1 6 Start	100	min. 70 cm ³ /1000 strokes		
1 7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	500 0,8-1,6 (0,5-1,9)	1000 (4,7-6,1)	1100 5,9-6,7 (5,6-7,0)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,8 - 3,4		1100 5,7 - 6,3
Overflow delivery	n = rev/min cm ³ /10 s			1100 55 - 138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)	3. Dimensions for assembly and adjustment mm
End stop	1270 1200 1150 1080 1000 500	max. 2,0 (20,5-29,5) (48,5-57,5) 72,5-74,5 (70,8-76,2) (71,3-76,7) 66,0-70,0 (64,6-71,4)		K KF MS SVS 4,0
switch-off				A B
Idle stop	300 340 400	(9,0-18,0) min. 1,5 max. 1,0		Observations
End stop	170 250	min. 70 max. 65		
2 4 Solenoid	max. cut-in voltage test voltage			

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 STE 4,0 K

1. Edition

En

Testoil-ISO 4113

VE 4/11 F 1200 R 94-2 (FD 442)

O 460 414 014

Note VDT-I-460/139

Overflow temperature 45° C

supersedes -

company: Steyr

engine: WD 411.45

47 kW

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

-

mm

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	800	3,4 - 3,8 mm		
1 2 Supply-pump pressure	800	4,7 - 5,3 bar (kgf/cm ²)		
1 3 Full-load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	800	64,5 - 65,5 cm ³ /1000 strokes		3,0 (3,5)
1 4 Idle regulation	300	21,0 - 25,0 cm ³ /1000 strokes		3,0 (4,0)
1 5 Full-speed regulation	1300	19,0 - 25,0 cm ³ /1000 strokes		
1 6 Start	100	min. 78,0 cm ³ /1000 strokes		
1 7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	500 0,7-1,5 (0,4-1,8)	800 (2,9-4,3)	1200 6,6-7,4 (6,3-7,7)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	500 3,2-3,8		1200 6,5-7,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)		1200 55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1340 1300 1250 1180 800 500	max. 3,0 (17,5-26,5) 54,5-61,5 (53,5-62,5) 66,5-68,5 (64,9-70,1) (62,4-67,6) 59,5-62,5 (57,6-64,4)	
switch-off			
Idle stop	400 350 300	max. 1,5 5,0-11,0 (3,5-12,5) (18,5-27,5)	
End stop	170 250	min. 78 min. 60	
2 4 Solenoid	max. cut-in voltage test voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,3
KF	5,3
MS	1,0
SVS	4,0
A	
B	

Observations

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⑥

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 REN 2,0 e
6. Edition

46

En

VE 4/9 F 2400 R 95

Overflow temperature 45° C

supersedes 1.84
company: Renault
engine: F 8 M

0 460 494 105

Test pressure line

DHK: 1 688 901 022/130 bar

6x2x450 mm / 1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/.

Pre-stroke setting

mm

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1400	4,1-4,6 mm		
1 2 Supply pump pressure	1400	4,9-5,5 bar (kgf/cm ²)		
1 3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure	1000	27,8-28,8 cm ³ /1000 strokes		
1 4 Idle regulation	425	6,0-10,0 cm ³ /1000 strokes		2,0 (3,0)
1 5 Full-speed regulation	2650	10,5-16,5 cm ³ /1000 strokes		
1 6 Start	100	min. 42,0 cm ³ /1000 strokes		
1 7 Load-dependent port-closing	1400			

2. Test Specifications

checking values in brackets ()

2 1 Timing device		n = rev/min mm	siehe Blatt 2			
2 2 Supply pump		n = rev/min bar (kgf/cm²)	600 2,5-3,1	2400 7,7-8,3		
Overflow delivery		n = rev/min cm³/10 s	600 55-138 (40-153)	2400 55-138 (40-153)		
2 3 Fuel deliveries						
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)	3. Dimensions for assembly and adjustment mm		
End stop	2800	max. 6,0		K	3,2-3,4	
	2650	(9,5-17,5)		KF	5,7-5,9	
	2500	21,0-29,0 (21,0-29,0)		MS	1,2-1,4	
	2400	29,2-31,8 (28,2-32,8)		SVS	2,8	
	2100	29,9-32,3 (28,8-33,4)				
	1400	27,5-29,5 (26,2-30,8)				
	1000	(26,0-30,6)				
	600	25,7-28,7 (24,2-30,2)				
switch-off	2400	0		A XK	18,7-20,7	
				B XL	9,5-12,8	
Idle stop	650	max. 1,0		Observations Please note instruc- tions on sheet 2.		
	600	0,2-5,2				
	425	(4,0-12,0)				
End stop	330	min. 30,0				
	500	max. 29,0				
2 4 Solenoid	max. cut-in voltage xxx min. 10 V rated voltage 12V.					

H18

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7.84

H48

2.1 Timing device

n = min/1	mm	Expansion element
600	0,7-1,5 (0,4-1,8)	12 V
1000	2,3-3,1 (2,0-3,4)	12 V
1400	(3,6-5,0)	12 V
2000	6,3-7,1 (6,0-7,4)	12 V
2100	6,7-7,5 (6,4-7,8)	12 V
2400	7,0-7,7 (6,6-8,0)	12 V

Testing the hydr. cold-start accelerator:

Apply 12 V to expansion element of hydr. cold-start accelerator.

At 300 1/min there must be a timing-device travel of 1.3 - 3.3 mm.

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 6.6i
3. Edition

En

supersedes 83
company IHC
engine DT 402

Overflow temperature 45° C

VE 6/12 F 1100 R 102
0 460 426 025

DHK 1 688 901 020
172 + 3 bar

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm + 0,02 (0,04)

see VDT-W-460/

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	600	3,2 - 3,6 mm	0,75	
1 2 Supply-pump pressure	600	5,0 - 5,6 bar (kgf/cm ²)	0,75	
1 3 Full-load delivery with charge-air pressure	800	99,0-100,0 cm ³ /1000 strokes	0,75	3,5 (4,0)
Full-load delivery without charge-air pressure	600	81,0-83,0 cm ³ /1000 strokes	0	
1 4 Idle regulation	375	20,0-26,0 cm ³ /1000 strokes	0	
1 5 Full-speed regulation	1200	33,0-39,0 cm ³ /1000 strokes	0,75	3,5 (4,5)
1 6 Start	100	min. 95 cm ³ /1000 strokes	0	
1 7 Load dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2 1 Timing device LDA=0,75 bar	n = rev/min mm	400 1,4-2,1 (1,0-2,4)	600 (2,7-4,1)	700 3,6-4,4 (3,3-4,7)
2 2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm ²)	400 3,9-4,5		1100 7,0 - 7,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-125 (40-140)		1100 55-125 (40-140)

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	1280 1220 1200 1080 800 600 * 600	max. 1,5 min. 2,0 (31,0-41,0) 95,0-98,0 (93,5-99,5) (96,5-102,5) 88,5-90,5 (85,7-93,3) (78,2-85,8)	0,75 0,75 0,75 0,75 0,57 0,2 0
switch-off	1100	0	
Idle stop	500 420 375	max. 1,5 min. 2,0 (18,0-28,0)	
End stop	200 440	min. 95 max. 85	

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,6-5,8
MS	1,5-1,7
SVS	max. 6,0
X K	20,2-22,2
X L	10,2-13,5

Observations

* Manifold-pressure
compensator stroke
= 4,0 mm
Correction at the
adjusting nut. (46)

2 4 Solenoid

max cut-in voltage xx min. 10,0 V
test voltage
xxxxxx rated voltage 12V.

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Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VMA 2,4 d

1. Edition

En

VE 4/10 F 1900 L 106
0 460 404 026

Overflow temperature 45° C

superseded by
company VM Motori
engine HR 492 HT9

Test ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1600	5,1 - 5,5 mm	0,75	
1.2 Supply-pump pressure	1600	5,5 - 6,5 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery with charge-air pressure	1600	47,0 - 48,0 cm ³ /1000 strokes	0,75	3,0 (3,5)
Full-load delivery without charge-air pressure	1600	31,0 - 34,0 cm ³ /1000 strokes	0	
1.4 Idle regulation	350	16,0 - 20,0 cm ³ /1000 strokes	0	2,5 (3,5)
1.5 Full-speed regulation	1900	43,5 - 46,5 cm ³ /1000 strokes	0,75	
1.6 Start	100	min. 65 cm ³ /1000 strokes	0	
1.7 Load dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	1000	1600	1900
LDA = 0,75	mm	1,0-1,8 (0,7-2,1)	(4,6-6,0)	6,5-7,5 (6,4-7,8)
2.2 Supply pump	n = rev/min	400		1900
LDA = 0,75	bar (kgf/cm ²)	1,5 - 2,1		6,8 - 7,4
Overflow delivery	n = rev/min	500		1900
	cm ³ /10 s	55-110 (40-125)		55-110 (40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2100	max. 1,0	0,75
	2050	min. 2,0	0,75
	2030	17,0 - 23,0 (16,0-24,0)	0,75
	1900	(41,0-49,0)	0,75
	1600	(29,8-35,2)	0
	1600	(44,8-50,2)	0,75
	* 750	41,5 - 44,5 (40,0-46,0)	0,90
	600	32,0 - 35,0 (30,5-35,5)	0
switch-off			
Idle stop	350	(14,0-22,0)	
	430	min. 2,5	
	500	max. 1,0	
End stop	350	min. 48	
	450	max. 47,5	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2 - 3,4
KF	5,7 - 6,0
MS	1,4 - 1,6
SVS	3,6
A	
B	

Observations

*Manifold-pressure
compensator stroke
= 4,2 mm

2.4 Solenoid

max cut-in voltage xxx min. 10 V
test voltage xxx rated voltage 12V.

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⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 VMA 3,6 e

1. Edition

En

VE6/11/F1900L113

Overflow temperature 45° C

supersedes
company
engineMotori VM
HR 692 HT/9

0 460 416 022

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm \pm 0,02 (0,04)

see VDT-W-460/

1. Settings	Rot speed rev/min	Settings	Charge-air press bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1500	4,7-5,3 mm	0,65	
1 2 Supply pump pressure	1800	6,6-7,2 bar (kgf/cm ²)	0,65	
1 3 Full-load delivery with charge-air pressure	1500	47,5-48,5 cm ³ /1000 strokes	0,65	3,5 (4,0)
Full-load delivery without charge air pressure	600	36,0-40,0 cm ³ /1000 strokes	0	
1 4 Idle regulation	450	10,0-14,0 cm ³ /1000 strokes	0	3,0 (4,0)
1 5 Full-speed regulation	2000	41,0-48,0 cm ³ /1000 strokes	0,65	
1 6 Start	100	min. 42,0 cm ³ /1000 strokes	0	
1 7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2 1 Timing device LDA=0,65 bar	n = rev/min mm	1000 2,1-2,9 (1,8-3,2)	1500 (4,3-5,7)	1800 6,5-6,9 (6,0-7,4)
2 2 Supply pump LDA=0,65 bar	n = rev/min bar (kgf/cm ²)	400 1,7-2,3		
Overflow delivery	n = rev/min cm ³ /10 s	400 55-138 (40-153)	1900 55-138 (40-153)	

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	2200	max 1,5	0,65
	2100	14,5-20,5 (13,0-22,0)	0,65
	2000	(40,0-49,0)	0,65
	1900	45,2-47,8 (43,9-49,1)	0,65
	1500	(45,4-50,6)	0,65
	* 600	38,5-41,5 (36,6-43,4)	0,26
	600	(34,6-41,4)	0
switch-off			
Idle stop	700	max. 1,0	
	550	2,0-8,0 (0,5-9,5)	
	450	(7,5-16,5)	
End stop	350	min. 40,0	
	450	max. 45,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	6,4-6,6
MS	0,9-1,1
SVS	2,4
XK	20,2-22,2
XL	11,9-15,2
A	
B	

Observations

*Manifold-pressure
compensator stroke
= 4,0 mm

2 4 Solenoid	max cut-in voltage xx min. 10 Volt
	test voltage XXXXXXXXXX rated voltage 12V.

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H22

H22

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 PEU 2,3 k 3

1. Edition

En

Testo: ISO 4113

VE 4/9 F 2075 R 126-1

Overflow temperature 45° C

0 460 494 123

Test pressure line

DHK: 1 688 901 022/130 bar

6x2x450 mm / 1 680 750 073

supersedes

company Peugeot

engine: XD 3 S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1500	5,8-6,2 mm	0,8	
1 2 Supply-pump pressure	1500	5,6-6,2 bar (kgf/cm ²)	0,8	
1 3 Full-load delivery with charge air pressure	500	42,8-43,8 cm ³ /1000 strokes	0	
Full-load delivery without charge-air pressure	1500	54,5-55,5 cm ³ /1000 strokes	0,8	2,5 (3,0)
1 4 Idle regulation	400	17,0-21,0 cm ³ /1000 strokes	0	2,0 (3,0)
1 5 Full-speed regulation	2350	25,0-31,0 cm ³ /1000 strokes	0,8	
1 6 Start	100	min. 57,0 cm ³ /1000 strokes	0	
1 7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	750 0,8-1,6 (0,5-1,9)	1000 2,5-3,3 (2,7-3,6)	1500 (5,3-6,7)	2000 7,8-8,6 (7,5-8,9)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	200 1,4-2,0	750 3,4-4,0	2000 7,1-7,7	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)	2075 55-138 (40-153)		

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2650	max. 1,0	0,8
	2350	(24,0-32,0)	0,8
	2250	37,0-43,0 (36,0-44,0)	0,8
	2000	53,0-55,0 (51,7-56,3)	0,8
	1500	(52,7-57,3)	0,8
	1000	52,0-55,0 (50,5-56,5)	0,8
	750*	48,7-49,7 (46,2-52,2)	0,25
	500	(40,3-46,3)	0
switch-off			
elektr.	400	0	
Idle stop	400	(15,0-23,0)	
	450	4,5-9,5 (3,0-11,0)	
	500	max. 3,5	
End stop	230	min. 60	
	330	max. 60	
2 4 Solenoid	max. cut-in voltage test voltage		

3. Dimensions

Designation	for assembly and adjustment mm
K	K1
KF	5,4-5,7
MS	1,2-1,4
SVS	4,6
A XK	20,2-22,2
B XL	9,3-12,6

Observations

Manifold-pressure
compensator stroke
= 4,5 mm
Correction at the
adjusting nut. (46)

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H23

H23

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 SOF 2,5 K
1. Edition

En

VE 4/11F 1900 R 127

0 460 414 008

DHK: 1 688 901 023 / 172 + 3 bar

Overflow temperature 45° C

Test pressure line

6x2x450 mm / 1 680 750 073

supersedes -

company: Iveco -Sofim

engine: 8140.21

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

see VDT-W-460/...

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1100	4,2 - 4,6 mm	0,8	
1 2 Supply pump pressure	1100	5,3 - 5,9 bar (kgf/cm ²)	0,8	
1 3 Full-load delivery with charge-air pressure	1100	45,5 - 46,5 cm ³ /1000 strokes	0,8	3,5 (4,0)
Full-load delivery without charge-air pressure	600	35,5 - 36,5 cm ³ /1000 strokes	0	
1 4 Idle regulation	400	13,0 - 17,0 cm ³ /1000 strokes	0	3,0 (4,0)
1 5 Full-speed regulation	2200	18,0 - 24,0 cm ³ /1000 strokes	0,8	
1 6 Start	100	min. 60 cm ³ /1000 strokes	0	
1 7 Load dependent port closing	1100	-	0,8	

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min	800	1100	1500	1900
LDA = 0,8 bar	mm	2,4-3,2 (2,1-3,5)	(3,7-5,1)	5,8-6,6 (5,5-6,9)	7,6-8,4 (7,3-8,7)
2 2 Supply pump	n = rev/min	600		1900	
LDA = 0,8 bar	bar (kgf/cm ²)	3,8 - 4,4		7,5 - 8,1	
Overflow delivery	n = rev/min	600		1900	
	cm ³ /10 s	5,5-138 (40-153)		55-138 (40-159)	

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2350	max. 10,0	0,8
	2200	(16,5-25,5)	0,8
	2000	30,0-38,0 (29,5-38,5)	0,8
	1900	40,15-42,65 (38,8-44,0)	0,8
	1500	42,75-45,25 (41,4-46,6)	0,8
	1100	(43,4-48,6)	0,8
	800	36,5-37,5 (34,4-39,6)	0,3
	600	(32,6-39,4)	0
switch-off			
Idle stop	550	max. 2,0	
	400	(10,5-19,5)	
	350	27,0-33,0 (25,5-34,5)	
End stop	200	min. 55	
	350	max. 55	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,2-5,4
MS	0,9-1,1
SVS	4,6
A	
B	

Observations

*Manifold-pressure
compensator stroke
= 6,2 mm

2 4 Solenoid

max. cut-in voltage xxx min. 10 Volt

rated voltage 12V.

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H24

H24

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 REN 2,0 h

3. Edition

En

2-84

 supersedes
company:
engine:

 REN
18S-234

VE 4/9 F 2100 R 130

Overflow temperature 45° C

0 460 494 128

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1400	4,0-4,4 mm	0,8	
1 2 Supply-pump pressure	1400	5,1-5,7 bar (kgf/cm ²)	0,8	
1 3 Full-load delivery with charge-air pressure	1400	46,7-47,7 cm ³ /1000 strokes	0,8	(2,5 (3,0))
Full-load delivery without charge-air pressure	600	29,5-30,5 cm ³ /1000 strokes	0	
1 4 Idle regulation	375	4,0-8,0 cm ³ /1000 strokes	0	2,5 (3,0)
1 5 Full-speed regulation	2300	18,0-24,0 cm ³ /1000 strokes	0,8	
1 6 Start	100	min. 50,0 cm ³ /1000 strokes	0	
1 7 Load dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	1000 1,9-2,7 (1,6-3,0)	1400 (3,5-4,9)	1800 5,8-6,6 (5,5-6,9)	2000 6,1-6,9 (5,8-7,2)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,9-2,5		1800 6,3-6,9	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)		2100 55-138 (40-153)	

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2600	max. 2,0	0,8
	2400	max. 14,0	0,8
	2300	(17,0-25,0)	0,8
	2000	39,9-42,9 (39,1-43,7)	0,8
	1400	(44,9-49,5)	0,8
	1000	42,6-45,6 (41,1-47,1)	0,8
	700 *	35,3-36,3 (33,5-38,1)	0,2
	600	(27,7-32,3)	
switch-off elektr.	400	0	
Idle stop	350	9,0-13,0 (7,0-15,0)	
	375	(2,0-10,0)	
End stop	480	max. 2,0	
	170	min. 40	
	300	max. 40	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,4-1,6
SVS	5,5
A XK	20,2-22,2
B XL	7,7-11,0

Observations

 Manifold-pressure
compensator stroke
= 4,5 mm
Correction at the
adjusting nut. (46)

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7.84

J1

Test Specifications

Distributor-type Fuel-injection Pumps

WPF 001/4 REN 2,0 m

1. Edition

En

VE 4/9 F 2100 R 130 - 1 Overflow temperature 45° C
0 460 494 157

supersedes -
company: Renault
engine: I 8 S 234 Turbo

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

mm

1. Settings

	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	4,0 - 4,4 mm	0,8	
1.2 Supply pump pressure	1400	5,1 - 5,7 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1400	46,7-47,7 cm ³ /1000 strokes	0,8	2,5 (3,0)
Full-load delivery without charge-air pressure	600	29,5-30,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	375	4,0-8,0 cm ³ /1000 strokes	0	2,5 (3,0)
1.5 Full-speed regulation	2300	18,0-24,0 cm ³ /1000 strokes	0,8	
1.6 Start	100	min. 50 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	1000	1400	1800	2000
LDA = 0,8 bar	mm	1,9-2,7 (1,6-3,0)	(3,5-4,9)	5,8-6,6(5,5-6,9)	6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min	400		1800	
LDA = 0,8 bar	bar (kgf/cm ²)	1,9 - 2,5		6,3 - 6,9	
Overflow delivery	n = rev/min	500		2100	
	cm ³ /10 s	55-138 (40-153)		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2600	max. 2,0	0,8
	2400	max. 14,0	0,8
	2300	(17,0 - 25,0)	0,8
	2000	39,9-42,9 (39,1- 43,7)	0,8
	1400	(44,9 - 49,5)	0,8
	1000	42,6-45,6 (41,1- 47,1)	0,8
	* 700	35,3-36,3 (33,5 - 38,1)	0,2
	600	(27,7 - 32,3)	0
switch-off			
elektr.	400	0	
Idle stop	350	9,0 - 13,0 (7,0 - 15,0)	
	375	(2,0 - 10,0)	
	480	max. 2,0	
End stop	170	min. 40	
	900	max. 40	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,1 - 3,4
KF	5,7 - 6,0
MS	1,4 - 1,6
SVS	3,6
A	
B	

Observations

*Manifold-pressure
compensator stroke
= 4,5 mm

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VWV 1,6 V 5

3. Edition

En

VE 4/9 F 2250 R 134-1
0 460 494 134

Overflow temperature 45° C

supersedes 12.83

company: VWV

engine: 086 T

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1500	3,3-3,7 mm	0,75	
1 2 Supply pump pressure	1500	4,6-5,2 bar (kgf/cm ²)	0,75	
1 3 Full-load delivery with charge-air pressure	1500	42,5-43,5 cm ³ /1000 strokes	0,75	2,5 (3,0)
Full-load delivery without charge-air pressure	600	22,5-23,5 cm ³ /1000 strokes	0	
1 4 Idle regulation	450	6,0-10,0 cm ³ /1000 strokes	0	2,0 (3,0)
1 5 Full-speed regulation	2525	9,0-15,0 cm ³ /1000 strokes	0,75	
1 6 Start	100	min. 35 cm ³ /1000 strokes	0	
1 7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min	1000	1500	2250
LDA=0,75 bar	mm	1,3-2,1 (1,0-2,4)	(2,8-4,2)	6,0-6,8 (5,7-7,1)
2 2 Supply pump	n = rev/min	600		2250
LDA=0,75 bar	bar (kgf/cm ²)	2,5 - 3,1		6,5-7,1
Overflow delivery	n = rev/min	600		2250 (0,75 bar)
	cm ³ /10 s	55-138 (40-153)		55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2750	max. 3,0	0,75
	2525	(8,0-16,0)	0,75
	2250	37,5-39,5 (36,2-40,8)	0,75
	1500	(40,8-45,2)	0,75
	1000 *	32,5-33,5 (30,8-35,2)	0,3
	600	(20,0-26,0)	0
switch-off			
mech.	2250	0	
elektr.	400	0	
Idle stop	450	(4,0-12,0)	
	1200	max. 9,0	
End stop	400	min. 21,0	
	500	max. 29,0	

3. Dimensions

Designation	for assembly and adjustment mm
K	
KF	3,2 - 3,4
MS	5,7 - 6,0
SVS	1,2 - 1,4
	5,7
A	
XK	18,4 - 20,4
XL	10,1 - 13,5

Observations

Manifold-pressure
compensator stroke
= 4,0 mm
Correction at the
adjusting nut. (46)

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VWV 1,6 V 6

3. Edition

En

VE 4/9 F 2250 R 134-2 Overflow temperature 45° C
0 460 494 135

supersedes 12.83
company: VWV
engine: 086 T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1500	3,3 - 3,7 mm	0,75 bar	
1 2 Supply-pump pressure	1500	4,6 - 5,2 bar (kgf/cm ²)	0,75	
1 3 Full-load delivery with charge-air pressure	1500	42,5 - 43,5 cm ³ /1000 strokes	0,75	2,5 (3,0)
Full-load delivery without charge-air pressure	600	22,5 - 23,5 cm ³ /1000 strokes	0	
1 4 Idle regulation	475	6,0 - 10,0 cm ³ /1000 strokes	0	2,0 (3,0)
1 5 Full-speed regulation	2525	9,0 - 15,0 cm ³ /1000 strokes	0,75	
1 6 Start	100	min. 35 cm ³ /1000 strokes	0	
1 7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min	1000	1500	2250
LDA = 0,75 bar	mm	1,3-2,1 (1,0-2,4)	(2,8-4,2)	6,0-6,8 (5,7-7,1)
2 2 Supply pump	n = rev/min	600	2250	
LDA = 0,75 bar	bar (kgf/cm ²)	2,5-3,1	6,5-7,1	
Overflow delivery	n = rev/min	600	2250	
	cm ³ /10 s	55-138 (40-153)	55-138 (40-153)	

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	2750	max. 3,0	0,75
	2525	(8,0-16,0)	0,75
	2250	37,5-39,5 (36,2-40,8)	0,75
	1500	(40,8-45,2)	0,75
	* 1000	32,5-33,5 (30,8-35,2)	0,3
	600	(20,0-26,0)	0
switch-off elektr.	400	0	
Idle stop	475	(4,0-12,0)	
	1200	max. 4,0	
End stop	400	min. 21,0	
	500	max. 29,0	
2 4 Solenoid	max. cut-in voltage	xxx min. 10,0 V	
	test voltage	rated voltage 12V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2 - 3,4
KF	5,7 - 6,0
MS	1,2 - 1,4
SVS	3,2
A	
XK	18,4 - 20,4
B	
XL	9,4 - 12,4

Observations

Manifold-pressure
compensator stroke
= 4,0 mm
Correction at the
adjusting nut. (46)

Testoil-ISO 4113

Test Specifications

Distributor-type

Fuel-injection Pumps

VE 6/10 F 2400 L 135

0 460 406 026

As of FD 444 note page 2.

supersedes

company VWV

engine: 087T - V01

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/.

Pre-stroke setting

mm

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	1,5- 1,9 mm	1,3	
1.2 Supply pump pressure	1500	5,7- 6,3 bar (kgf/cm ²)	1,3	
1.3 Full-load delivery with charge-air pressure	1500	44,0-45,0 cm ³ /1000 strokes	1,3	2,5(3,0)
Full-load delivery without charge-air pressure	700	24,0-25,0 cm ³ /1000 strokes	0	
1.4 Idle regulation	415	6,0-10,0 cm ³ /1000 strokes	0	2,0(3,0)
1.5 Full-speed regulation	2675	10,0-16,0 cm ³ /1000 strokes	1,3	
1.6 Start	100	min. 42,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	siehe Blatt 2		
2.2 Supply pump ALDA=1,3 bar	n = rev/min bar (kgf/cm ²)	600 3,3-3,9	1500* 6,8-7,4	2400 7,8-8,4
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138 (40-153)	2400 55-138 (40-153)	
2.3 Fuel deliveries	Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop		2825	max. 6,0	1,3
		2675	(9,0-17,0)	1,3
		2400	35,0-37,0 (33,7-38,3)	1,3
		1500	(42,2-46,8)	1,3
		1000	37,0-38,0 (35,2-39,8)	0,7
		700	(21,5-27,5)	0
		600 **	21,2-24,8 (20,0-26,0)	0,4
switch-off				
	elektr.	400	0	
Idle stop		750	max. 3,0	
		415	(4,0-12,0)	
	End stop	400	min. 16,0	
		500	max. 26,0	
2.4 Solenoid	max. cut-in voltage xx min. 10 V rated voltage 12V.			

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,3-6,6
MS	1,7-1,9
SVS	max. 5,9
A	
B	

Observations

Please note instruc-
tions on sheet 2

2.1 Timing device

$n = \text{min}^{-1}$	ALDA	Solenoid valve	mm
1200	1.3 bar	12 V	0.0-0.8 (0.0-1.1)
1200	1.3 bar	0 V	1.5-2.7 (1.4-2.8)
1500	1.3 bar	12 V	(1.0-2.4)
1500	1.3 bar	0 V	3.2-4.2 (3.0-4.4)
2400	1.3 bar	12 V	5.4-6.2 (5.1-6.5)

Adjust EGR with a gauge

$n = \text{min}^{-1}$	ALDA	Solenoid valve	Fuel delivery $\text{cm}^3 / 1000 \text{ strokes}$
1000	0 bar	12 V	13.0-15.0

as of FD 444:

2.3 Fuel deliveries

$n = \text{min}^{-1}$	ALDA	Fuel delivery $\text{cm}^3 / 1000 \text{ strokes}$
2825	1.3	max. 6.0
2675	1.3	10.0-16.0 (9.0-17.0)
2400	1.3	35.0-37.0 (33.7-38.3)
1500	1.3	44.0-45.0 (42.2-46.8)
1000**	0.7	37.0-38.0 (35.2-39.8)
600	0	25.5-26.5 (23.0-29.0)

End stop

$n = \text{min}^{-1}$	ALDA	Fuel delivery $\text{cm}^3 / 1000 \text{ strokes}$
400	0	min. 20.0
500	0	max. 30.0

** ALDA-stroke = 7.5 mm

* 0 V at the solenoid valve. Do not activate the cold-start accelerator lever when checking starting fuel delivery.

End

VE 6/10 F 2400 L 135 - 1

0 460 406 028

As of FD 444 note page 2.

supersedes

company: 087 T - Vol
engine:

engine:

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1500	1,5- 1,9 mm	1,3	
1 2 Supply-pump pressure	1500	5,7- 6,3 bar (kgf/cm ²)	1,3	
1 3 Full-load delivery with charge-air pressure	1500	44,0-45,0 cm ³ /1000 strokes	1,3	2,5 (3,0)
Full-load delivery without charge-air pressure	700	24,0-25,0 cm ³ /1000 strokes	0	
1 4 Idle regulation	415	6,0-10,0 cm ³ /1000 strokes	0	2,0 (3,0)
1 5 Full-speed regulation	2675	10,0-16,0 cm ³ /1000 strokes	1,3	
1 6 Start	100	min. 42,0 cm ³ /1000 strokes	0	
1 7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets (

2.1 Timing device	n = rev/min mm	siehe Blatt 2		
2.2 Supply pump ALDA=1,3 bar	n = rev/min bar (kgf/cm ²)	600 3,3-3,9	1500* 6,8-7,4	2400 7,8-8,4
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138 (40-153)	2400 55-138 (40-153)	

23 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	2825	max. 6,0	1,3
	2675	(9,0-17,0)	1,3
	2400	35,0-37,0 (33,7-38,3)	1,3
	1500	(42,2-46,8)	1,3
	1000	37,0-38,0 (35,2-39,8)	0,7
	700	(21,5-27,5)	0
	600**	21,2-24,8 (20,0-26,0)	0,4
switch-off			
elektr.	400	0	
mech.	2400	0	
Idle stop	750	max. 3,0	
	415	(4,0-12,0)	
End stop	400	min. 16,0	
	500	max. 26,0	
24 Solenoid	max cut-in voltage	xxx min. 10 V	
	rated voltage xxx	rated voltage 12V.	

3. Dimensions

for assembly
and adjustment
1 mm

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	6,3-6,6
MS	1,7-1,9
SVS	max.5,9
A	
B	

Observations

Please note instructions on sheet 2

2.1 Timing device

$n = \text{min}^{-1}$	ALDA	Solenoid valve	mm
1200	1.3 bar	12 V	0.0-0.8 (0.0-1.1)
1200	1.3 bar	0 V	1.5-2.7 (1.4-2.8)
1500	1.3 bar	12 V	(1.0-2.4)
1500	1.3 bar	0 V	3.2-4.2 (3.0-4.4)
2400	1.3 bar	12 V	5.4-6.2 (5.1-6.5)

Adjust EGR with a gauge

$n = \text{min}^{-1}$	ALDA	Solenoid valve	Fuel delivery $\text{cm}^3 / 1000 \text{ strokes}$
1000	0 bar	12 V	13.0-15.0

as of FD 444:

2.3 Fuel deliveries

$n = \text{min}^{-1}$	ALDA	Fuel delivery $\text{cm}^3 / 1000 \text{ strokes}$
2825	1.3	max. 6.0
2675	1.3	10.0-16.0 (9.0-17.0)
2400	1.3	35.0-37.0 (33.7-38.3)
1500	1.3	44.0-45.0 (42.2-46.8)
1000**	0.7	37.0-38.0 (35.2-39.8)
600	0	25.5-26.5 (23.0-29.0)

End stop

$n = \text{min}^{-1}$	ALDA	Fuel delivery $\text{cm}^3 / 1000 \text{ strokes}$
400	0	min. 20.0
500	0	max. 30.0

** ALDA-stroke = 7.5 mm

* 0 V at the solenoid valve. Do not activate the cold-start accelerator lever when checking starting fuel delivery.

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VW 1,6 W8

1. Edition

En

VE 4/9 F 2400 R 136-1
0 460 494 166

Overflow temperature 45° C

supersedes VW
company: 086-1,6 L
engine:

Test ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1500	2,4-2,8 mm		
	1500	4,3-4,9 bar (kgf/cm ²)		
1 2 Supply-pump pressure	-	cm ³ /1000 strokes		
1 3 Full-load delivery with charge-air pressure	1500	32,0-33,0 cm ³ /1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure	450	6,0-10,0 cm ³ /1000 strokes		2,0 (3,0)
1 4 Idle regulation	2600	11,0-17,0 cm ³ /1000 strokes		
1 5 Full-speed regulation	100	min. 35,0 cm ³ /1000 strokes		
1 6 Start	-			
1 7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	1000 0,6-1,4 (0,3-1,7)	1500 (1,9-3,3)	2400 5,8-6,6 (5,5-6,9)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,2-2,8	2400 6,4-7,0	
Overflow delivery	n = rev/min cm ³ /10 s	600 44-138 (40-153)	2400 55-138 (40-153)	

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2800	max. 3,0	
	2600	(10,0-18,0)	
	2400	27,3-29,3 (30,2-34,8)	
	1500	(20,0-26,0)	
	600		
switch-off elektr.	400	0	
Idle stop	1200	max. 6,0	
	600	max. 7,0	
	450	(4,0-10,0)	
End stop	400	min. 18	
	500	max. 23,5	
2 4 Solenoid	max. cut-in voltage	xxx min. 10 V	
	test voltage	rated voltage 12V.	
	XXXXXXXXXX		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,3
KF	5,7-5,9
MS	1,3-1,5
SVS	2,5
A	
B	

Observations

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8.84

Test Specifications Distributor-type Fuel-injection Pumps

En

VE 5/10 F 2400 L 137
0 460 405 030

Overflow temperature 45° C

supersedes 7.83
company: VWV
engine: 153

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,14 mm - 0,02 (0,04)

see VDT-W-460/.

Test ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1400	2,4-2,8 mm		
1 2 Supply-pump pressure	1400	5,0-5,6 bar (kgf/cm ²)		
1 3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1400	35,0-36,0 cm ³ /1000 strokes		2,5 (3,0)
1 4 Idle regulation	375	6,0-10,0 cm ³ /1000 strokes		2,0 (3,0)
1 5 Full-speed regulation	2650	6,0-12,0 cm ³ /1000 strokes		
1 6 Start	100	min. 50,0 cm ³ /1000 strokes		
1 7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	1000 1,3-2,1 (1,0-2,4)	1400 (1,9-3,3)	2400 5,1-5,9 (4,8-6,2)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,8-3,4		2400 7,5-8,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)		2400 55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2800 2650 2400 1400 750	max. 3,0 (5,0-13,0) 29,5-31,5 (28,3-32,7) (33,3-37,7) 25,0-28,0 (24,2-28,8)	
switch-off mech. elektr.	2400 400	0 0	
Idle stop	375 450	(4,0-12,0) max. 3,0	
End stop	400 500	min. 16,5 max. 23,5	
2 4 Solenoid	max. cut-in voltage rated voltage	xx min. 10,0 V 12V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,7-6,0
MS	1,7-1,9
SVS	2,8
A	
B	

Observations

⑥

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWV 2,0 i 2

2. Edition

46

En

VE 5/10 F 2400 L 137-1 Overflow temperature 45° C

 supersedes 7.83
 company: VWV
 engine: 153

0 460 405 032

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,14 mm \pm 0,02 (0,04)

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1400	2,4-2,8 mm		
1 2 Supply-pump pressure	1400	5,0-5,6 bar (kgf/cm ²)		
1 3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1400	35,0-36,0 cm ³ /1000 strokes		2,5 (3,0)
1 4 Idle regulation	375	6,0-10,0 cm ³ /1000 strokes		2,0 (3,0)
1 5 Full-speed regulation	2650	6,0-12,0 cm ³ /1000 strokes		
1 6 Start	100	min. 50,0 cm ³ /1000 strokes		
1 7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	1000 1,3-2,1 (1,0-2,4)	1400 (1,9-3,3)	2400 5,1-5,9 (4,8-6,2)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,8-3,4		2400 7,5-8,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)		2400 55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2800 2650 2400 1400 750	max. 3,0 (5,0-13,0) 29,5-31,5 (28,3-32,7) (33,3-37,7) 25,0-28,0 (24,2-28,8)	
switch-off	2400	0	
mech. elektr.	400	0	
Idle stop	375 450	(4,0-12,0) max. 3,0	
End stop	400 500	min. 16,5 max. 23,5	
2 4 Solenoid	max. cut-in voltage xxx min. 10,0 V test voltage xxx rated voltage 12V		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	
KF	5,7-6,0
MS	1,7-1,9
SVS	2,8
A	
B	

Observations

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7.84

J11

JAA

Test Specifications

Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 3,9 y

3. Edition

En

VE 4/11 F 1150 R 140
O 460 414 009
DHK 1 688 901 020

Overflow temperature 45° C

supersedes 4.84
company: IHC
engine: DT 239/856

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm $\pm 0,02$ (0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	800	4,5 - 4,9 mm	0,8	
1 2 Supply-pump pressure	800	5,3 - 5,9 bar (kgf/cm ²)	0,8	
1 3 Full-load delivery with charge-air pressure	800	92,2 - 93,2 cm ³ /1000 strokes	0,8	3,5 (4,0)
Full-load delivery without charge-air pressure	500	75,5 - 77,5 cm ³ /1000 strokes	0	
1 4 Idle regulation	350	23,0 - 27,0 cm ³ /1000 strokes	0	3,5 (4,0)
1 5 Full-speed regulation	1250	42,0 - 48,0 cm ³ /1000 strokes	0,8	
1 6 Start	100	min. 100 cm ³ /1000 strokes	0	
1 7 Load-dependent port-closing	-	-		

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min	400	800	1150
LDA = 0,8 mm	mm	0,8-1,6 (0,5-1,9)	(4,0 - 5,4)	5,3 - 6,1 (5,0 - 6,4)
2 2 Supply pump	n = rev/min	400	1150	
LDA = 0,8 bar	bar (kgf/cm ²)	3,7 - 4,3	6,4 - 7,0	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)	1150 55-138 (40-153)	

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1300	max. 2,5	0,8
	1270	min. 2,5	0,8
	1250	(40,5 - 49,5)	0,8
	1130	85,4 - 88,4 (84,2-89,6)	0,8
	800	(90,0-95,4)	0,8
	800 *	86,4-90,4 (85,7-91,1)	0,3
	500	83,5-84,5 (80,6-87,4)	0,23
	500	(73,1-79,9)	0

switch-off

Idle stop

350 (20,5-29,5)
400 (3,5-12,5)
450
max. 3,0
End stop 220 min. 100
300 max. 80

2 4 Solenoid

max. cut-in voltage xx min. 10 V
test voltage xxx rated voltage 12V.

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,2 - 5,4
MS	1,2 - 1,4
SVS	5,0
* K	20,2 - 22,2
B X L	12,3 - 15,7

Observations

* Manifold-pressure
compensator stroke
= 4,9 mm
Correction at the
adjusting nut. (46)

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VWV 2,4 1

3. Edition

En

12.83

VE 6/10 F 2400 L 144

Overflow temperature 45° C

superseded
VWV
company
087 T
engine:

0 460 406 029

Different test specs with restriction bore 0.86 mm. See Page 2.

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

Test ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1500	1,2-1,6	0,75	
1 2 Supply pump pressure	1500	5,7-6,3	0,75	
1 3 Full-load delivery with charge-air pressure	600	25,5-26,5	0	
Full-load delivery without charge-air pressure	1500	44,0-45,0	0,75	2,5 (3,0)
1 4 Idle regulation	375	6,0-10,0	0	2,0 (3,0)
1 5 Full-speed regulation	2600	10,0-16,0	0,75	
1 6 Start	100	min. 42	0	
1 7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2 1 Timing device LDA=0,75 bar	n = rev/min mm	See Page 2 (without restriction bore)	
2 2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm ²)	600 3,3-3,9	2400 7,8 - 8,4
Overflow delivery	n = rev/min cm ³ /10 s	600 (0 bar) 55-138(40-153)	2400 (0,75 bar) 55-138(40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)	Designation	for assembly and adjustment mm
End stop	2750 2600 2400 1500 800** 600	max. 4,0 (9,0-17,0) 35,0-37,0 (33,7-38,3) (42,2-46,8) 32,5-33,5 (30,0-36,0) (23,0-29,0)	0,75 0,75 0,75 0,75 0,3 0	K KF MS SVS LDA-Hub**	3,2-3,4 6,3-6,6 1,7-1,9 max.6,0 5,3
switch-off				A XK B XL	21,8-23,8 8,9-12,3
elektr.	400	0			
Idle stop	375 450	max. 3,0 (4,0-12,0)		Observations	
End stop	400 500	min. 20 max. 30			
2 4 Solenoid	max. cut-in voltage xxx min. 10 V rated voltage 12V.				

3. Dimensions

Timing device

$n = \text{min}^{-1}$	Solenoid valve	manifold-pressure compensator	mm
1500	12 Volt	0.75	1.2-1.6 (0.7-2.1)
1500	0 Volt	0.75	3.0-4.0 (2.8-4.2)
2000	12 Volt	0.75	3.6-4.4 (3.3-4.7)
2000	0 Volt	0.75	4.9-6.1 (4.8-6.2)
2400	12 Volt	0.75	5.6-6.4 (5.3-6.7)

Supply pump

1500	0 Volt	0.75	6.8-7.4 bar
------	--------	------	-------------

Differing test specifications for solenoid valve with throttle bore

Timing device

$n = \text{min}^{-1}$	Solenoid valve	manifold-pressure compensator	mm
1500	12 Volt	0.75	0.8-1.2 (0.3-1.7)
1500	0 Volt	0.75	3.0-4.0 (2.8-4.2)
2000	12 Volt	0.75	3.1-3.9 (2.8-4.2)
2000	0 Volt	0.75	5.8-7.0 (5.7-7.1)
2400	12 Volt	0.75	5.0-5.8 (4.7-6.1)

Supply pump

1500	0 Volt	0.75	6.8-7.4 bar
------	--------	------	-------------

Idle

415 min^{-1}	6.0-10.0 (4.0-12.0) ccm/1000 str.
750 min^{-1}	max. 3.0

Full load

2850 min^{-1}	max. 4.0 ccm/1000 str.
2675 min^{-1}	10.0-16.0 (9.0-17.0) ccm/1000 str.

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VWV 2,4 1 1

3. Edition

En

VE 6/10 F 2400 L 144-1

Overflow temperature 45° C

 superseded 12.83
 company: VWV
 engine: 087 T

0 460 406 030

Different test specs with restriction bore 0.86 mm. See Page 2.

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1500	1,2-1,6 mm	0,75	
1 2 Supply-pump pressure	1500	5,7-6,3 bar (kgf/cm ²)	0,75	
1 3 Full-load delivery with charge-air pressure	600	25,5-26,5 cm ³ /1000 strokes	0	
Full-load delivery without charge-air pressure	1500	44,0-45,0 cm ³ /1000 strokes	0,75	2,5 (3,0)
1 4 Idle regulation	375	6,0-10,0 cm ³ /1000 strokes	0	2,0 (3,0)
1 5 Full-speed regulation	2600	10,0-16,0 cm ³ /1000 strokes	0,75	
1 6 Start	100	min. 42 cm ³ /1000 strokes	0	
1 7 Load-dependent port-closing	-	-		

2. Test Specifications

checking values in brackets ()

2 1 Timing device LDA=0,75 bar	n = rev/min mm	See Page 2 (without restriction bore)	
2 2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm ²)	600 3,3-3,9	2400 8,1-8,7
Overflow delivery	n = rev/min cm ³ /10 s	600 (0 bar) 55-138(40-153)	2400 (0,75 bar) 55-138(40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2750	max. 4,0	0,75
	2600	(9,0-17,0)	0,75
	2400	35,0-37,0 (33,7-38,3)	0,75
	1500	(42,2-46,8)	0,75
	800**	32,5-33,5 (30,0-36,0)	0,3
	600	(23,0-29,0)	0
switch-off mech. elektr.	2400	0	
	400	0	
Idle stop	375	(4,0-12,0)	
	450	max. 3,0	
End stop	400	min. 20	
	500	max. 30	
2 4 Solenoid	max. cut-in voltage xxx min. 10 V test voltage xxx rated voltage 12V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,3-6,6
MS	1,7-1,9
SVS	max. 6,0
LDA-Hub**	5,3
A XK	21,8-23,8
B XL	8,9-12,3

Observations

Timing device

$n = \text{min}^{-1}$	Solenoid valve	manifold-pressure compensator	mm
1500	12 Volt	0.75	1.2-1.6 (0.7-2.1)
1500	0 Volt	0.75	3.0-4.0 (2.8-4.2)
2000	12 Volt	0.75	3.6-4.4 (3.3-4.7)
2000	0 Volt	0.75	4.9-6.1 (4.8-6.2)
2400	12 Volt	0.75	5.6-6.4 (5.3-6.7)

Supply pump

1500	0 Volt	0.75	6.8-7.4 bar
------	--------	------	-------------

Differing test specifications for solenoid valve with throttle bore

Timing device

$n = \text{min}^{-1}$	Solenoid valve	manifold-pressure compensator	mm
1500	12 Volt	0.75	0.8-1.2 (0.3-1.7)
1500	0 Volt	0.75	3.0-4.0 (2.8-4.2)
2000	12 Volt	0.75	3.1-3.9 (2.8-4.2)
2000	0 Volt	0.75	5.8-7.0 (5.7-7.1)
2400	12 Volt	0.75	5.0-5.8 (4.7-6.1)

Supply pump

1500	0 Volt	0.75	6.8-7.4 bar
------	--------	------	-------------

Idle

415 min^{-1}	6.0-10.0 (4.0-12.0) ccm/1000 str.
750 min^{-1}	max. 3.0

Full load

2850 min^{-1}	max. 4.0 ccm/1000 str.
2675 min^{-1}	10.0-16.0 (9.0-17.0) ccm/1000 str.

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VWV 2,4 1 3

2. Edition

46

En

10.83

VE 6/10 F 2400 L 146

Overflow temperature 45° C

 superseded
 company: VWV
 engine: 087

O 460 406 033

Test 1.80

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1500	2,8-3,2 mm		
1 2 Supply-pump pressure	1500	5,2-5,8 bar (kgf/cm ²)		2,5 (3,0)
1 3 Full-load delivery with charge-air pressure	1500	28,5-29,5 cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	-	- cm ³ /1000 strokes		2,0 (3,0)
1 4 Idle regulation	375	6,0-10,0 cm ³ /1000 strokes		
1 5 Full-speed regulation	100	min. 35 cm ³ /1000 strokes		
1 6 Start	2700	6,0-12,0 cm ³ /1000 strokes		
1 7 Load dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	750 0,2-1,0 (0-1,3)	750 (*)	1500 (2,3-3,7)	1500 (*)	2400 5,7-6,5 (5,4-6,8)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,8-3,4		1500 (*)		2400 7,7-8,3
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138 (40-153)			2400 55-138 (40-153)	

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2825 2700 2400 1500 750	max. 3,0 (5,0-13,0) 22,0-24,0 (20,7-25,3) (26,7-31,3) 26,0-29,0 (24,5-30,5)	
switch-off elektr.	400	0	
Idle stop	375 600	(4,0-12,0) max. 4,0	
End stop	400 500	min. 20 max. 25	
2 4 Solenoid	max. cut-in voltage xxx min. 10 V test voltage xxx rated voltage 12V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	mm
K	3,2-3,4
KF	6,4-6,7
MS	1,5-1,7
SVS	3,6
A XK	21,8-23,8
B XL	8,9-12,3

Observations

Please note instructions on sheet 2

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VW 2.4 L 2

Timing device

$n = \text{min}^{-1}$	Solenoid valve	mm
750	0 Volt	1.2-2.4 (1.1-2.5)
1500	0 Volt	3.7-4.7 (3.5-4.9)

Supply pump

1500	0 Volt	6.3-6.9 bar
------	--------	-------------

As of FD 445

Timing device

$n = \text{min}^{-1}$	Solenoid valve	mm
1000	12 Volt	0.6-1.4 (0.3-1.7)
1000	0 Volt	1.8-3.0 (1.7-3.1)
1500	12 Volt	2.8-3.2 (2.3-3.7)
1500	0 Volt	4.1-5.1 (3.9-5.3)
2400	12 Volt	6.0-6.8 (5.7-7.1)

Supply pump

1500	0 Volt	6.6-7.2 bar
------	--------	-------------

* Do not apply any voltage to the solenoid valve at the points so marked.

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 VWV 2,4 I 2

2. Edition

En

VE 6/10 F 2400 L 146-1

Overflow temperature 45° C

supersedes 10.83

company: VWV

engine: 087

0 460 406 034

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1500	2,8-3,2 mm		
1 2 Supply pump pressure	1500	5,2-5,8 bar (kgf/cm ²)		
1 3 Full-load delivery with charge-air pressure	1500	28,5-29,5 cm ³ /1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure	-	- cm ³ /1000 strokes		
1 4 Idle regulation	375	6,0-10,0 cm ³ /1000 strokes		2,0 (3,0)
1 5 Full-speed regulation	100	min. 35 cm ³ /1000 strokes		
1 6 Start	2700	6,0-12,0 cm ³ /1000 strokes		
1 7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	750 0,2-1,0 (0-1,3)	750 (*)	1500 (2,3-3,7)	1500 (*)	2400 5,7-6,5 (5,4-6,8)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,8-3,4	1500 (*)	2400 7,7-8,3		
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138 (40-153)		2400 55-138 (40-153)		

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	2825 2700 2400 1500 750	max. 3,0 (5,0-13,0) 22,0-24,0 (20,7-25,3) (26,7-31,3) 26,0-29,0 (24,5-30,5)	
switch-off			
mech.	2400	0	
elektr.	400	0	
Idle stop	375 600	(4,0-12,0) max. 4,0	
End stop	400 500	min. 20 max. 25	
2 4 Solenoid	max. cut-in voltage test voltage	xxx min. 10 V xxxxxx rated voltage 12V.	

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	6,4-6,7
MS	1,5-1,7
SVS	3,6
A XK	21,8-23,8
B XL	8,9-12,3

Observations

Please note instructions on sheet 2

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6.84

J19

J49

VW 2.4 L 2

Timing device

$n = \text{min}^{-1}$	Solenoid valve	mm
750	0 Volt	1.2-2.4 (1.1-2.5)
1500	0 Volt	3.7-4.7 (3.5-4.9)

Supply pump

1500	0 Volt	6.3-6.9 bar
------	--------	-------------

As of FD 445

Timing device

$n = \text{min}^{-1}$	Solenoid valve	mm
1000	12 Volt	0.6-1.4 (0.3-1.7)
1000	0 Volt	1.8-3.0 (1.7-3.1)
1500	12 Volt	2.8-3.2 (2.3-3.7)
1500	0 Volt	4.1-5.1 (3.9-5.3)
2400	12 Volt	6.0-6.8 (5.7-7.1)

Supply pump

1500	0 Volt	6.6-7.2 bar
------	--------	-------------

* Do not apply any voltage to the solenoid valve at the points so marked.

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VWV 1,6 W 3

3. Edition

En

VE 4/9 F 2250 R 149
0 460 494 138

Overflow temperature 45° C

supersedes 3.84
company: VWV
engine 086 T

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1500	3,8-4,2 mm	0,75	
1 2 Supply-pump pressure	1500	4,6-5,2 bar (kgf/cm ²)	0,75	
1 3 Full load delivery with charge air pressure	600	23,5-24,5 cm ³ /1000 strokes	0	
Full load delivery without charge air pressure	1500	43,5-44,5 cm ³ /1000 strokes	0,75	2,5 (3,0)
1 4 Idle regulation	475	6,0-10,0 cm ³ /1000 strokes	0	2,0 (3,0)
1 5 Full-speed regulation	2525	9,0-15,0 cm ³ /1000 strokes	0,75	
1 6 Start	100	min. 35,0 cm ³ /1000 strokes	0	
1 7 Load dependent port closing	-			

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	1000 1,8-2,6 (1,5-2,9)	1500 (3,3-4,7)	2250 6,1-6,9 (5,8-7,2)
LDA=0,75 bar 2 2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,5-3,1		2250 6,5-7,1
LDA=0,75 bar Overflow delivery	n = rev/min cm ³ /10 s	600 55-138 (40-153)		2250 (0,75 bar) 55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2750	max. 3,0	0,75
	2525	(8,0-16,0)	0,75
	2250	38,0-39,0 (36,7-41,3)	0,75
	1500	(41,8-46,2)	0,75
	1000 *	33,5-34,5 (31,8-36,2)	0,3
	600	(21,0-27,0)	0
switch-off elektr.	400	0	
Idle stop	475	(4,0-12,0)	
	1200	max. 5,0	
End stop	400	min. 22,0	
	500	max. 30,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,2-1,4
SVS	4,4
** FH	1,8-2,4
XK	18,4-20,4
XL	8,6-12,0
A	
B	

Observations

* Manifold-pressure
compensator stroke
= 4,0 mm
Correction at the
adjusting nut. (46)

*operating
stroke (KSB)

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7.84

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 CUM 5,9 i

1. Edition

En

Test-Specifications

VE 6/12 F 1250 R 159-1
0 460 426 041
DHK: 1 688 901 016/207 +3bar
Overflow temperature 45° C

supersedes Cummins
company: 6 BT-590
engine 114 kW bei 2500 1/min

All test specifications are valid only for Bosch Fuel Injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm

see VDT-W-460/

1. Settings	Rot speed rev/min	Settings	Charge-air press bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	750	3,1-3,5 mm		
1 2 Supply pump pressure	750	3,6-4,2 bar (kgf/cm ²)		
1 3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1100	80,0-81,0 cm ³ /1000 strokes		4,0 (4,5)
1 4 Idle regulation	375	22,0-28,0 cm ³ /1000 strokes		3,0 (4,5)
1 5 Full-speed regulation	1300	54,5-62,5 cm ³ /1000 strokes		
1 6 Start	100	min. 97,0 cm ³ /1000 strokes		
1 7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	500 1,1-1,9 (0,8-2,2)	750 (2,6-4,0)	1100 5,0-5,8 (4,7-6,1)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,5-3,1		1100 5,1-5,7
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)		1250 55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	1390	max. 1,5	
	1300	(53,5-63,5)	
	1250	75,0-78,0 (73,5-79,5)	
	1100	(77,5-83,5)	
	750	84,5-88,5 (82,8-90,2)	
	500	81,5-85,5 (79,8-87,2)	
switch-off ELAB	375		
Idle stop	300	45,0-53,0 (44,0-54,0)	
	375	(20,0-30,0)	
	450	max. 1,5	
End stop	130	min. 97,0	
	200	max. 85,0	
2 4 Solenoid	max cut-in voltage test voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,1-5,3
MS	1,4-1,6
SVS	1,2
AXK	20,2-22,2
EXL	11,0-14,4

Observations

Pulling electro-
magnet 24 V

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8.84

J22

J22

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 CDC 5,9 a

1. Edition

En

VE 6/12 F 1100 R 159-2

0 460 426 042

DHK 1688 901 016/207 + 3 bar

Overflow temperature 45° C

supersedes -

company CDC

engine 6 BT 590-106 kW

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm $\pm 0,02$ (0,04)

see VDT-W-460/

1. Settings

	Rot speed rev/min	Settings	Charge-air press bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	750	3,1-3,5 mm		
1 2 Supply-pump pressure	750	3,6-4,2 bar (kgf/cm ²)		
1 3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	900	82,0-83,0 cm ³ /1000 strokes		4,0 (4,5)
1 4 Idle regulation	375	22,0-28,0 cm ³ /1000 strokes		3,5 (4,5)
1 5 Full speed regulation	1220	34,0-40,0 cm ³ /1000 strokes		
1 6 Start	100	min. 97 cm ³ /1000 strokes		
1 7 Load dependent port-closing				

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	500 1,2-2,0 (0,9-2,3)	750 (2,6-4,0)	1100 5,1-5,9 (4,8-6,2)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,6-3,2		1100 5,0-5,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)		1100 55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	1280 1250 1220 1100 900 750 500	max. 1,5 6,0-14,0 (5,0-15,0) (32,0-42,0) 75,0-78,0 (73,5-79,5) (79,5-85,5) 81,0-85,0 (80,0-86,0) 79,0-83,0 (77,3-84,7)	
switch-off			
Idle stop	300 375 450	47,0-55,0 (46,0-56,0) (20,0-30,0)	°
End stop	130 200	max. 1,5 min. 97 max. 85	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,1-5,4
MS	1,4-1,6
SVS	1,2
A XK	20,2-22,2
S XL	10,7-14,1

Observations

2 4 Solenoid

max cut-in voltage XXX min. 10 V
rated voltage 12V.

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J23

J22

Test Specifications

Distributor-type

Fuel-injection Pumps

En

VE 6/12 F 1100 R 159-8 Overflow temperature 45° C

0 460 426 050

DHK: 1 688 901 016/207+3 bar

supersedes Cummins
company 6 BT - 590
engine

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre stroke setting 0,3 mm $\pm 0,02$ (0,04)

see VDT W-460/

1. Settings

	Rot speed rev/min	Settings	Charge-air press bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	750	3,1-3,5 mm		
1 2 Supply pump pressure	750	3,7-4,3 bar (kgf/cm ²)		
1 3 Full load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
Full load delivery without charge-air pressure	900	73,0-74,0 cm ³ /1000 strokes		4,0 (4,5)
1 4 Idle regulation	375	18,5-24,5 cm ³ /1000 strokes		3,5 (4,5)
1 5 Full speed regulation	1175	28,0-34,0 cm ³ /1000 strokes		
1 6 Start	100	min. 97,0 cm ³ /1000 strokes		
1 7 Load dependent port closing				

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	400 0,3-1,1 (0-1,4)	750 (2,6-4,0)	1100 5,4-6,2 (5,1-6,5)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,2-2,8		1100 5,2-5,8
Overflow delivery	n = rev/min cm ³ /10 s	400 55-138 (40-153)		1100 55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	1250	max. 1,5	
	1175	(26,0-36,0)	
	1100	66,0-69,0 (64,5-70,5)	
	900	(70,5-76,5)	
	750	74,5-78,5 (72,8-80,2)	
	400	88,0-92,0 (86,3-93,7)	
switch-off			
ELAB	375	0	
Idle stop	300	47,0-55,0 (46,0-56,0)	
	375	(16,5-26,5)	
End stop	450	max. 1,5	
	130	min. 97	
	200	max. 90	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,1-5,3
MS	1,4-1,6
SVS	1,2
A	
B	

Observations

2 4 Solenoid

max. cut-in voltage xxx min. 10 V
test voltage xxxxx rated voltage 12V.

Test Specifications

Distributor-type

Fuel-injection Pumps

En

WPP 001/4 CUM 5,9 K

1. Edition

VE 6/12 F 1000 R 159-10 Overflow temperature 45° C
 0 460 426 052
 Nozzle-and-holder assembly 1 683 901 016/207 ± 3 bar

supersedes -
 company: Cummins
 engine: 6 BT 5.9
 65 kW / 2000 1/min

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	750	4,0-4,4 mm		
1.2 Supply-pump pressure	750	4,1-4,7 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	900	53,0-54,0 cm ³ /1000 strokes		4,0(4,5)
1.4 Idle regulation	375	27,0-33,0 cm ³ /1000 strokes		3,5(4,5)
1.5 Full-speed regulation	1050	28,0-34,0 cm ³ /1000 strokes		
1.6 Start	100	min. 97,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	400 1,4-2,2 (1,1-2,5)	750 (3,5-4,9)	1000 6,0-6,8 (5,7-7,1)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,5-3,1		1000 5,2-5,8
Overflow delivery	n = rev/min cm ³ /10 s	400 55-138 (40-153)		1000 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1100 1050 1000 900 750 400	max. 1,5 (26,0-36,0) 48,5-51,5 (47,0-53,0) (50,5-56,5) 53,5-57,5 (51,8-59,2) 50,0-54,0 (48,3-55,7)	
switch-off			
ELAB	375		
Idle stop	375 400 450 130 200	(25,0-35,0) 10,5-18,5 (9,5-19,5) max. 1,5 min. 97 max. 85	
End stop			
2.4 Solenoid	cut-in voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	
KF	5,1-5,3
MS	1,4-1,6
SVS	1,2
A	
B	

Observations

24 V Pulling
electromagnet

Test Specifications

Distributor-type Fuel-injection Pumps

WPP001/4 CUM 5,9 h

1.Edition

En

VE 6/12 F 1000 R 159-11 Overflow temperature 45° C

0 460 426 053

Nozzle-and-holder assembly 1 688 901 016/207 + 3 bar

supersedes -

company: Cummins

engine: 6 BT 590

65 kW / 2000 1/min

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm \pm 0,02 (0,04)

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	750	4,0-4,4 mm		
1.2 Supply-pump pressure	750	4,1-4,7 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	900	53,0-54,0 cm ³ /1000 strokes		4,0 (4,5)
1.4 Idle regulation	375	27,0-33,0 cm ³ /1000 strokes		3,5 (4,5)
1.5 Full-speed regulation	1050	28,0-34,0 cm ³ /1000 strokes		
1.6 Start	100	min. 97,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	400 1,4-2,2 (1,1-2,5)	750 (3,5-4,9)	1000 6,0-6,8 (5,7-7,1)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,5-3,1	1000 5,2-5,8	
Overflow delivery	n = rev/min cm ³ /10 s	400 55-138 (40-153)	1000 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1100 1050 1000 900 750 400	max. 1,5 (26,0-36,0) 48,5-51,5 (47,0-53,0) (50,5-56,5) 53,4-57,5 (51,8-59,2) 50,0-54,0 (48,3-55,7)	
switch-off ELAB	375		
Idle stop	375 400 450 130 200	(25,0-35,0) 10,5-18,5 (9,5-19,5) max. 1,5 min. 97 max. 85	
2.4 Solenoid	cut-in voltage	min. 10V rated voltage 12 V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,1-5,3
MS	1,4-1,6
SVS	1,2
A	
B	

Observations

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 PEU 1,9 b

2. Edition

En

Test-I-ISO 4113

VE 4/9 F 2300 R 162

0 460 494 153

DHK: 1 688 901 022/130 bar

Test pressure line

6x2x450 mm / 1 680 750 073

Overflow temperature 45° C

 superseded 03.84
 company: Peugeot
 engine: XUD 9

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	2000	7,8- 8,2 mm		
1 2 Supply-pump pressure	1250	3,9- 4,5 bar (kgf/cm ²)		
1 3 Full-load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
Full-load delivery without charge-air pressure *	1250	28,8-29,8 cm ³ /1000 strokes		2,5(3,0)
1 4 Idle regulation	A 550	3,5- 4,5 cm ³ /1000 strokes		B 2,5(3,0)
1 5 Full-speed regulation	2400	19,3-25,3 cm ³ /1000 strokes		
1 6 Start	100	min. 44,0 cm ³ /1000 strokes		
1 7 Load-dependent port-closing	1250			

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	700 0,5-1,5(0,3-1,7)	1250 3,4-4,2(3,1-4,5)	2000 (7,3-8,7)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	700 2,3-2,9		2000 5,9-6,5
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138(40-153)		2300 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2650 2500 2400 2250 2000 1250 700	max. 7,0 10,7-16,7 (9,7-17,7) (18,3-26,3) 28,9-30,9 (27,6-32,2) 29,7-31,7 (28,4-33,0) (27,0-31,6) 29,5-32,5 (28,0-34,0)	
switch-off	2300	0	
Idle stop	A 550 B 350 C 470	3,5- 4,5 8,0-12,0 (6,0-14,0) 8,0-12,0 (6,0-14,0)	
End stop	200 300	min. 40,0 max. 35,0	
2 4 Solenoid	max. cut-in voltage test voltage rated voltage	xxx min. 10 V xxxxxxx 12V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	3,0
A	
B	

Observations

 Residual delivery
 setting idle setting
 (LFG) as per VDT-I-
 460135

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 FIA 3,9 a

2. Edition

En

Overflow temperature 45° C

VE 4/11 F 1250 L 164

0 460 414 013 DHK: 1 688 904 020

 supersedes 3.84
 company: Fiat
 engine: 8045.05.200

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm -0,02 (0,04)

see VDT-W-4601.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	800	3,8-4,2 mm		
1 2 Supply pump pressure	800	5,1-5,7 bar (kgf/cm ²)		
1 3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	800	73,5-74,5 cm ³ /1000 strokes		3,5(4,0)
1 4 Idle regulation	350	21,0-25,0 cm ³ /1000 strokes		3,5(4,0)
1 5 Full-speed regulation	1350	29,0-35,0 cm ³ /1000 strokes		
1 6 Start	100	min. 80,0 cm ³ /1000 strokes		
1 7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	500 1,2-2,0 (0,9-2,1)	800 (3,3-4,7)	1250 7,6-8,4 (7,3-8,7)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	500 3,6-4,2		1250 7,0-7,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)		1250 55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1430 1380 1350 1250 800 500	max. 1,0 6,0-16,0 (6,5-15,5) (27,5-36,5) 69,5-72,5 (68,3-73,7) (71,3-76,7) 64,0-67,0 (62,1-68,9)	
switch-off	1250	0	
Idle stop	500 425 350	max. 2,0 4,0-10,0 (2,5-11,5) (18,5-27,5)	
End stop	150 250	min. 90,0 max. 65,0	
2 4 Solenoid	max cut-in voltage XXX min. 10 V test voltage XXX rated voltage 12V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,4-5,6
MS	1,5-1,7
SVS	5,0
A	
B	

Observations

BOSCH

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8.84

K4

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 MAN 5,6 p1

1. Edition

En

VE6/12 F 1100 R 166-1

Overflow temperature 45° C

supersedes MAN

company: D 0226 MT E 51

engine:

0 460 426 040

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-stroke setting

0,2

mm

- 0,02 (0,04)

see VDT-W-460/...

Test ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	700	3,3-3,7 mm		
1 2 Supply-pump pressure	700	4,3-4,9 bar (kgf/cm ²)		
1 3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	700	90,5-91,5 cm ³ /1000 strokes		4,0 (4,5)
1 4 Idle regulation	300	13,0-19,0 cm ³ /1000 strokes		3,5 (4,5)
1 5 Full-speed regulation	1230	18,0-24,0 cm ³ /1000 strokes		
1 6 Start	100	min. 80,0 cm ³ /1000 strokes		
1 7 Load-dependent port-closing	700	-		

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	500 1,5-2,3 (1,2-2,6)	700 (2,8-4,2)	900 3,7-4,5 (3,4-4,8)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	500 3,3-3,9	1100 5,9-6,5	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138(40-153)	1100 55-138(40-153)	

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1280	max. 1,0	
	1230	(16,0-26,0)	
	1170	70,0-78,0 (69,0-79,0)	
	1100	89,5-92,5 (88,0-94,0)	
	900	91,0-95,0 (90,0-96,0)	
	700	(88,0-94,0)	
	500	91,0-95,0 (89,3-96,7)	
switch-off			
Idle stop	370	max. 1,0	
	330	3,0-9,0 (1,0-11,0)	
	300	(11,0-21,0)	
End stop	350	min. 101	
	450	max. 101	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,7-5,9
MS	0,9-1,1
SVS	2,5
A	
B	

Observations

2 4 Solenoid

 max. cut-in voltage XXX min. 10 V
 max. rated voltage 12V.

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VMA 2.2 b

2. Edition

En

3.84

supersedes

company: VM Motori

engine: HR 492 HT

Testoil-ISO 4113

VE 4/10 F 2100 L 168
0 460 404 038

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1600	4,5 - 4,9 mm	0,8	
1 2 Supply pump pressure	1600	5,6 - 6,2 bar (kgf/cm ²)	0,8	
1 3 Full-load delivery with charge-air pressure	1600	59,0 - 60,0 cm ³ /1000 strokes	0,8	3,0 (3,5)
Full-load delivery without charge-air pressure	1600	37,5 - 40,5 cm ³ /1000 strokes	0	
1 4 Idle regulation	400	16,0 - 20,0 cm ³ /1000 strokes	0	2,5 (3,5)
1 5 Full-speed regulation	2300	27,0 - 33,0 cm ³ /1000 strokes	0,8	
1 6 Start	100	min. 55,0 cm ³ /1000 strokes	0	
1 7 Load-dependent port-closing	—	—	—	—

2. Test Specifications

checking values in brackets ()

2 1 Timing device LDA=0,8 bar	n = rev/min mm	1000 0,9-1,7 (0,6-2,0)	1600 (4,0-5,4)	2100 7,0-7,8 (6,7-8,1)
2 2 Supply pump LDA=0,8 bar	n = rev/min bar (kgf/cm ²)	400 1,5-2,1	2100 7,2-7,8	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)	2100 55-138 (40-153)	

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	2450	2,0 - 8,0 (0,5-9,5)	0,8
	2300	(25,5-34,5)	0,8
	2100	51,8-54,2 (48,5-57,5)	0,8
	1600	(36,3-41,7)	0
	1600	(56,8-62,2)	0,8
	* 700	50,0-51,0 (47,1-53,9)	0,4
	600	41,5-42,5 (38,6-45,4)	0
switch-off	2100	0	
Idle stop	600	max. 1,0	
	450	3,5-9,5 (2,0-11,0)	
	400	(13,5-22,5)	
End stop	400	min. 52,0	
	500	max. 46,0	
2 4 Solenoid	max. cut-in voltage	xxx min. 10 V	
	10 kV max. xx	rated voltage 12V.	

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2 - 3,4
KF	5,7 - 5,9
MS	0,7 - 0,9
SVS	3,6
A	
B	

Observations

Manifold-pressure
compensator stroke
= 6,1 mm
Correction at the
adjusting nut. (46).

Test Specifications

Distributor-type Fuel-injection Pumps

Testoil-ISO 4113

VE 4/8 F 2300 R 171

Test pressure line
6x2x450 mm / 1 680 750 073superseded by 03.84
company: Peugeot
engine: XUD 7

0 460 484 010

DHK: 1 688 901 022/130 bar Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/...

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1250	3,8- 4,2 mm		
1 2 Supply pump pressure	1250	4,3- 4,9 bar (kgf/cm ²)		
1 3 Full-load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
Full-load delivery without charge-air pressure *	1250	29,5-30,5 cm ³ /1000 strokes		2,5(3,0)
1 4 Idle regulation	A 550	3,5- 4,5 cm ³ /1000 strokes		B 2,0(3,0)
1 5 Full-speed regulation	2400	19,0-25,0 cm ³ /1000 strokes		
1 6 Start	100	min. 42,0 cm ³ /1000 strokes		
1 7 Load-dependent port-closing	1250			

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	700 0,8-1,6(0,5-1,9)	1250 (5,3-4,7)	2000 3,0-8,8(7,7-9,1)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	700 2,8-3,4		2000 6,4-7,0
Overflow delivery	n = rev/min cm ³ /10 s			2300 55-138(40-153)
2 3 Fuel deliveries	Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop		2650	max. 7,0	
		2500	11,5-17,5 (10,5-18,5)	
		2400	(18,0-26,0)	
		2250	28,0-30,0 (26,7-31,3)	
		2000	29,0-31,0 (27,7-32,3)	
		1250	(27,7-32,3)	
		700	29,5-32,5 (28,0-34,0=	
switch-off		2300	0	
Idle stop	A	550	3,5 - 4,5	
	B	350	8,0 -12,0 (6,0-14,0)	
	C	470	8,0 -12,0 (6,0-14,0)	
End stop		200	min. 44,0	
		300	max. 34,0	
2 4 Solenoid	max. cut-in voltage xx min 10 V test voltage rated voltage 12V. xxxxxxx			

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,2-5,5
MS	1,3-1,5
SVS	max. 3,0
A	
B	

Observations

Residual delivery
setting idle setting
(LFG) as per VDT-1-
460135

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 STE 5,0 f

1. Edition

En

 VE 6/11 F 1150 R 172
 U 460 416 032

Overflow temperature 45° C

 supersedes
 company Steyr
 engine WD 611.87

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	800	3,5 - 3,9 mm	0,8	
1 2 Supply-pump pressure	800	5,4 - 6,0 bar (kgf/cm ²)	0,8	
1 3 Full-load delivery with charge-air pressure	800	70,0 - 71,0 cm ³ /1000 strokes	0,8	
Full-load delivery without charge-air pressure	500	53,5 - 54,5 cm ³ /1000 strokes	0	
1 4 Idle regulation	250	16,0 - 20,0 cm ³ /1000 strokes	0	
1 5 Full speed regulation	1200	37,0 - 43,0 cm ³ /1000 strokes	0,8	
1 6 Start	100	min. 80 cm ³ /1000 strokes	0	
1 7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2 1 Timing device LDA = 0,8 bar	n = rev/min mm	600 1,4 - 2,2 (1,1-2,5)	800 (3,0 - 4,4)	1130 6,8-7,6 (6,5-7,9)
2 2 Supply pump LDA = 0,8 bar	n = rev/min bar (kgf/cm ²)	500 3.8 - 4,4		1130 6,8 - 7,4
Overflow delivery	n = rev/min cm ³ /10 s	500(0 bar) 55-138 (40 - 153)		1150 (0,8 bar) 55-138(40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1310 1250 1200 1130 800 ★ 500 500	max. 1,0 14,5 - 21,5 (13,5-22,5) (35,5-40,5) 71,0 - 74,0 (69,8-75,2) (67,8-73,2) 61,5 - 62,5 (58,6-65,4) (50,6-57,4)	0,8 0,8 0,8 0,8 0,8 0,15 0
switch-off			
Idle stop	380 330 250 170 250	max. 1,0 min. 2,0 (13,5 - 22,5) min. 80 max. 50	
2 4 Solenoid	max. cut-in voltage test voltage		

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,2 - 5,5
MS	1,3 - 1,5
SVS	4,0
A	
B	

Observations

*Manifold-pressure
compensator stroke
= 4,0 mm

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7.84

K8

K8

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 CUM 5,9 g

1. Edition

En

supersedes

company:

engine:

Cummins

6 BT-590

VE 6/12F 1400 R173

0 460 426 038

DHK: 1683 901 016

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm \pm 0,02 (0,04)

see VDT-W-460/

1. Settings

	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1100	2,0-2,4 mm	0,75	
1 2 Supply pump pressure	1100	4,3-4,9 bar (kgf/cm ²)	0,75	
1 3 Full-load delivery with charge-air pressure	1100	86,0-87,0 cm ³ /1000 strokes	0,75	4,0 (4,5)
Full-load delivery without charge-air pressure	500	73,5-74,5 cm ³ /1000 strokes	0	
1 4 Idle regulation	375	20,0-26,0 cm ³ /1000 strokes	0	3,5 (4,5)
1 5 Full-speed regulation	1600	31,0-39,0 cm ³ /1000 strokes	0,75	
1 6 Start	100	min. 97,0 cm ³ /1000 strokes	0	
1 7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min	900	1100	1400
LDA = 0,75 bar mm		0,4-1,2 (0,1-1,5)	(1,5-2,9)	2,9-3,7 (2,6-4,0)
2 2 Supply pump	n = rev/min	500	1400	
LDA = 0,75 bar (kgf/cm ²)		2,0-2,6	5,6-6,2	
Overflow delivery	n = rev/min cm ³ /10 s			

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	1750	max. 1,5	0,75
	1600	(30,0-40,0)	0,75
	1400	79,5-82,5 (78,0-84,0)	0,75
	1250	82,5-85,5 (81,0-87,0)	0,75
	1100	(83,5-89,5)	0,75
	★ 750	80,0-81,0 (77,5-83,5)	0,3
	500	(70,3-77,7)	
switch-off			
Idle stop	450	max. 1,5	
	375	(18,0-28,0)	
	300	35,0-43,0 (34,0-44,0)	
End stop	130	min. 97,0	
	200	max. 85,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,1-5,9
MS	1,4-1,6
SVS	2,4
A	
B	

Observations

Stop check electric
shutoff device at
375 min/1.
Manifold-pressure
compensator stroke
= 4,5 mm

BOSCH

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8.84

K9

K9

Test Specifications Fuel Injection Pumps (1A) and Governors

40
WPP 001/4 MB 5,7 11
1. Edition

En

PES 6 A 80 C 410 RS 2085 EP/RSV 300-900 A 7 B 528
C

supersedes
company Daimler-Benz
engine OM 352
Aggregat - 75 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1000	9	5,5-6,0	0,4			
200	6 15 6	2,2-3,0 11,5-12,8 1,3-2,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 49,5	900 920 930	16,0 9,6 4,8	without auxiliary spring X = 0,5				-	-	-	-
ca. 48	900 920 950	7,5-8,0 2,4-3,7 0 - 1,0								
2a			with auxiliary spring **							

Set idle auxiliary spring so that 2.5 mm control-rod travel is reached at n=920-930 min/1
The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40 C (104 F)		Note changed to 1 rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
880	48,0-50,0 (46,5-51,5)	900	-	-	100	13,2-13,8 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col 2
XXXXXXXXXXXX

4.84

BOSCH

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K10

K40

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 l

3. Edition

En

PES 6 A 80 C 410 RS 2085 EP/RSV 575-1100 A 7 B 533 DL

D

Komb.-Nr. 0 400 876 174

supersedes 6.70

company Daimler-Benz

OM 352

engine Mandrescher - 108 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2, 15-2,25

Port closing at prestroke (2, 10-2,30) mm (from BDC)

Test oil ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	9	5,5-6,0	0,4			
200	6 15 6	2,2-3,0 11,5-12,8 1,3-2,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 56,5	1100 1110 1120	12,0 7,0 2,4	without auxiliary spring x = 1,0				575 200 575	5,0 19-21 4,7-5,3	1080 900 650	0 0,1-0,3 0,3-0,5
ca. 56	1100 1130 1180	8,2-9,4 3,0-4,4 0 - 1,0	with auxiliary spring **				600 660	2,8-4,0 0 - 1,0		

The numbers denote the sequence of the tests Set idle auxiliary spring so that 3.0 mm control-rod travel is reached at n = 1140 - 1150 min/1.

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm ³ /1000 strokes 2	3		4	5	6	7	8	9
1230	56,0-57,0 (54,5-58,5)	1100		800	52,5-55,5 (51,0-57,0)	100	13,2-13,8 mm RW	575	5,0
				500	48,0-51,0 (46,5-52,5)				

Checking values in brackets

* 1 mm less control rod travel than 2

4.84

K11

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

 WPP 001/4 RAB 9,7a 2
En 1. Edition

PES 6 A 95 D 410 RS 2108

RQ 200/1000 AB 647 L

Komb.-Nr. 0 400 846 270

supersedes

company Raba

engine D 2156 HM 6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{1,7-1,8}{(1,65-1,85)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,0	7,5-8,0	0,35 (0,6)			
	6,0	3,2-4,2				
200	6,0	0,5-1,4				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11		Control rod travel mm 12
450	15,7-16,3	450	16,0	1000	15,7-16,0	440	0	100	7,0-8,1	-	-	-
				1040	4,0-12,0			200	4,6-6,7			
				1080	0-4,6			300	0 - 2,6			
				1100	0			340	0			

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6		Control rod travel mm 7
1000	107,5-109,5 (105,5-111,5)			700	104,5-107,5 (102,0-110,0)	-	-	-
				500	108,5-111,5 (106,0-114,0)			

Checking values in brackets

9.84

K12

K42

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②

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 OMB 7,4 b

2. Edition

En

Testoil-ISO 4113

PES 6 A 90 D 410 RS2494 RQ 275/1300 AB954D (1)
 PES 6 A 90 D 410 RS2502 RQV 250-1300 AB961D (2)
 Komb.-Hr. 0 400 846 375 (1)
 0 400 846 386 (2)

supersedes 5.76
 company O M B
 engine CP 3 - 130

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke		mm (from BDRW = 9,0-12,0 mm; Zyl. 6)				
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1300	14,0+0,1	8,2 - 8,3	0,3(0,45)	12,2+0,1	8,4 - 8,5	n=250 min ⁻¹
275	8,9-9,1	1,1 - 1,7	0,2(0,4)	9,9-10,1	2,9 - 3,3	

Adjust the fuel delivery from each outlet according to the values in []

B. Governor Settings

RQ .. 954D

Checking of slider		Full load speed regulation				Idle speed regulation				Torque control	
rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
1050	15,0-15,8	1050	15,4	1320	14,0-15,4	630	0	100	6,4-8,1	700	15,6-15,8
				1390	7,4-12,0			250	5,0-7,9	900	15,4-15,6
				1440	0 - 8,2			400	2,0-4,2		
				1530	0			530	0		

Torque control travel on flyweight assembly dimension a

0,2 mm

Speed regulation At 1345 - 1360 =

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /100 strokes
1	2	3	4	5	6	7
1300	81,5 - 82,5 (79,5 - 84,5)	600	800	78,5 - 81,5 (76,5 - 83,5)	-	-
			500	72,0 - 75,0 (70,0 - 77,0)		

1455-1465
Control switch

Checking values in brackets

5.84

K13

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K43

RQV .. 961 D

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 66	1350	15,0-17,6	-	-	-	ca. 21	100	min. 11,5	250	1,0-2,0
ca. 62	11,3 4,0 1600	1340-1350 1465-1495 0 - 1,0					250	9,9-10,1 780-840=2,0	700	4,0-4,5 8,2
						250-700				

Torque control travel a 0,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1300	84,0 - 85,0 (82,0 - 87,0)	1340-1350 *	800	82,0 - 85,0 (80,0 - 87,0)	100	112,0-124,0 (109,0-127,0) = 16,0-16,6 mm RW	1300 1000 700 500	12,3+0,1 12,3+0,1 12,4+0,1 12,5+0,1
			500	74,0 - 76,0 (72,0 - 78,0)	Change-over point 100-170 (80-190)			

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113**B. Governor Settings**

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11

Torque control travel a mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 16,0 d 1

1. Edition

En

PE 10 A 90 D 520/5 LS 2515 RQ 250/1250 AB 1170-2R

Komb.-Nr. 0 400 649 228

1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4

0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes

company MAN

engine D 2530 MF

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,5-1,6$
($1,45-1,65$) mm (from BDC) Zyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,5+0,1	10,3-10,4	0,3(0,45)			
250	7,4-7,6	0,9-1,5	0,25(0,4)			

Adjust the fuel delivery from each outlet according to the values in

Test: ISO 4113

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Test specifications Control rod travel mm 4		Test specifications rev/min 6		Test specifications Control rod travel mm 8		Test specifications rev/min 9		Control rod travel mm 12	
600	15,6-16,4	600	16,0	10,5 4,0	1295-1310 1365-1395	250	6,0	100 250 360-400 = 2,0 500	min. 7,5 5,9-6,1 max. 1,0	1250 600 870 970	11,5-11,6 12,1-12,2 11,9-12,1 11,5-11,8

Torque-control travel on flyweight assembly dimension a = 0,30 mm Speed regulation at 1295-1310 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes / mm 7	
1250	102,5-103,5 (100,5-105,5)	-		800	95,5-98,5 (93,5-100,5)	100	133,0-143,0 (130,0-146,0)
				500	90,0-94,0 (88,0-96,0)	250	6,5 mm RW

Checking values in brackets

7.84

K15

K45

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 1 g 8

3. Edition

En

PES 4 A 85 D 410/3 RS 2610 RSV 325-1150 A 8 B 2163 L
Komb.-Nr. 0 400 864 055 A 8 C 2163 L

superseded 9.83

company KHD

engine F 4 L 913

55 kW (75 PS)₁bei 2300 min⁻¹

Schlepper DX 80

Identification S 16

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,5 - 2,6$ mm (from BDC)
(2,45-2,65)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,3+0,1	6,8 - 6,9	0,3(0,45)			
325	9,1-9,3	1,5 - 1,9	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 19	325	8,7	1150	11,3+0,1
	x = 1,5						100	min.19,0	500	12,1+0,1
							325	9,1-9,3	800	11,8+0,2
⑤ ca.55	10,3	1190-1200					470-530	2,0	900	11,6+0,2
	4,0	1245-1275								
	1400	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational- speed limit	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	9
1150	68,0-69,0 (66,0-71,0)	1190-1200*	300	65,0-67,0 (63,0-69,0) 58,0-61,0 (55,5-63,5)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 EIC 3,9 c

5. Edition

En

PES 4 A 90 D 320 RS 2634 RSV 300-1025 A 1 B 2153 R
A 1 C 2153 R

1 - 2 - 4 - 3 je $90^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Komb.-Nr. 0 400 824 233

supersedes 5.84

company Eicher

engine EDL 4-2
65 kW (88 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,15-2,35) mm (from BDC; RW=9,0 - 12,0 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 5
1025	12,6+0,1	8,1 - 8,2	0,2(0,45)			
300	10,9+0,2	4,4 - 4,9	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca. 16	300	10,5	1025	12,6+0,1
	x =	2,25					300	10,9-11,1	500	13,2+0,1
							300	10,9-11,1	895	12,9+0,2
ca. 4G	11,6	1065-1075					400-460 = 2,0			
⑤	4,0	1095-1125								
	12 60	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1025	81,0-82,0 (79,0-84,0)	1065-1075*	750	83,5-86,5 (81,5-88,5)	100	19,5-21,0 mm RW	-	-	
			500	77,0-79,0 (75,0-81,0)					

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

K17

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K47

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BAO 13,8 a

2. Edition

En

PE 12 A 90 D 521 RS 2648 RQV 325-1500 AB 1164 R

Komb.-Nr. 0 400 650 002

supersedes 5.84
Baudouin
company DF 12 AN, S
engine 308 kW

1- 4- 9- 8- 5 - 2 - 11- 10- 3 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

Specifications apply to test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Start of delivery marking,
mark cylinder 1 at 24° on
the timing device.

A. Fuel Injection Pump Settings

Port closing at prestroke (2,15-2,25)
(2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	9,6-9,7	6,2-6,3	0,3(0,45)			
325	6,0-6,2	1,1-1,7	0,25(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1500	15,2-17,8	-	-	-	ca. 13	100	min. 7,5	300	0,9-1,0
ca. 46	8,6 4,0 1700	1540-1550 1595-1625 0-1,0				345-460 3a	325 355-415=2,0 500 max. 1,0	6,0-6,2	700 1100 1500	3,1-3,2 5,1-5,2 8,4

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④a	Fuel delivery characteristics high idle speed ⑤a ⑤b		Starting fuel delivery idle switching point ⑥	Torque-control travel ⑤ Control rod travel mm		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
1500	61,5-62,5 (59,5-64,5)	1540-1550*	-	-	100	113,0-123,0 (110,0-126,0) =19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 EIC 3,9 g 1

4. Edition

En

PES 6 A 80 D 320 RS 2652 RSV 300-1150 A 0 B 2001-2 R
Komb.-Nr. 0 400 876 317 A 0 C 2001-2 R

supersedes 5.84
company Eicher
engine EDL 6-2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25
(2,1-2,3) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
1150	12,0+0,1	7,8 - 7,9	0,25(0,4)			
300	8,3-8,5	2,0 - 3,0	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 25	300	7,9	-	-
	x = 4,75						100	min. 19,5		
							300	8,3 - 8,5		
ca. 49	11,0	1190-1200					450-510	= 2,0		
2a	4,0	1285-1315								
	1430	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery		4a Idle stop	
Test oil temp. 40 °C (104 °F)		Note changed to 1 rev/min				Idle			
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	5	4	5	6	7	8	9
1150	77,5-78,5 (76,0-80,0)	1190-1200*	600	71,0-73,0 (69,0-75,0)		100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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9.84

K19

K19

①

Test Specifications Fuel Injection Pumps ① and Governors

WPF 001/4 FOR 6,6 a

1. Edition

En

PES 6 A 95 D 410 RS 2688

RQV 350-1400 AB 1202 L

supersedes

company Ford

engine 6,6 L NA

Komb.-Nr. 9 400 085 231

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,15-3,25$ mm (from BDC)
(3,10-3,30)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,1+0,1	7,1-7,3	0,35 (0,6)			
350	6,4-6,5	0,7-1,1	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1430	15,2-17,8	-	-	-	ca. 16	100	min. 9,0	350	1,8-2,1
ca. 63	9,1	1440-1450					350	6,4-6,6	500	3,1-3,5
	4,0	1530-1560					720-780	= 2,0	1000	5,4-5,7
	1680	0 - 1,0				320-480			430	8,5

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	70,5-72,5 (68,5-74,5)	1440-1450*	500	50,5-53,5 (48,0-56,0)	100	112,0-122,0 = 19,0-21,0 mm RW	-	

Checking values in brackets

* 1 mm less control rod travel than col 2

8.84

K20

K20

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 LIE 8,4 a

1. Edition

En

PES 6 A 95 D 410 RS 2689 RSV 400-1000 A 1 C 2187 L
Komb.-Nr. 0 400 876 322

supersedes
company Liebherr
engine D 906 NA

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,7-2,8
Port closing at prestroke (2,65-2,85) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	9,7-9,8	8,1-8,3	0,35(0,6)			
400	6,1-6,3	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm/rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-0,7	-	-	-	ca. 23	400	5,7	1000	9,7-9,8
	x = 2,5						400	6,1-6,3	550	9,7-9,9
							455-515	2,0	430	10,9-11,5
ca. 50	8,7	1040-1050								
2a	4,0	1065-1095								
	1230	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery		5 4a Idle stop	
Test oil temp 40 °C (104 °F)		Note changed to				Idle			
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1000	81,0-83,0 (79,0-85,0)	1040-1050*		600	68,5-71,5 (66,0-74,0)	100	125,0-135,0 (122,0-138,0)	0 -	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps ③ and Governors

WPP 001/4 MB 2,4 d
4. Edition

PES 4 M 55 C 320 RS 60 EP/MN 60 M 46 DR (1)
EP/MN 60 M 42 DR (2)
EP/MN 60 M 51 DR (3)
EP/MN 60 M 43 DR (4)

supersedes 11.76
company Daimler Benz
engine OM 616
(1/3-PKW)
(2/4-Transporter)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,70-1,80}{(1,65-1,85)}$ mm (from BDC) / max. RW

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	5	6	7
2250	13,7 (+0,1)	3,9 - 4,1	0,2(0,25)			
250 1600 1000	9,0-9,2 Sect.C, col. 4-6	0,4 - 1,0	0,15(0,2) 0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Torque control travel mm	Leakage		Control rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col.	Time at least s	Vacuum mm w.c.	Control rod travel mm	Vacuum mm w.c.	Control rod travel mm	Vacuum mm w.c.	Control rod travel mm	Vacuum mm w.c.	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
1,1+0,1	500-480	10	520	13,7	580 615 675	9,2-13,7 6,2-10,7 3,2- 7,2	675 850	9,2-10,2 7,7- 8,7	150 250 350 520	14,8-14,9 14,4-14,8 13,9-14,3 13,7-13,8

control rod travel test (cols. 4-11)
* rotational speed 500 rev/min.
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp. 40°C (104°F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control rod travel from full-load to idle
rev/min	Vacuum mm wat. col.	cm ³ /1000 strokes	rev/min	Vacuum mm wat. col.	cm ³ /1000 strokes	rev/min	Vacuum mm wat. col.	mm cm ³ /1000 strokes
1	2	3	4	5	6	7	8	8
2250	520	39,7 - 40,7 (38,7 - 41,1)	1600	360	38,9 - 40,5 (37,9 - 41,5)	500	600	3,2 - 4,2
			1000	140	38,2 - 39,7 (37,2 - 40,7)	250	ca. 880	4,5 - 10,5

Checking values in brackets

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPF 001/4 MB 2,4 t

1. Edition

En

PES 4 M 55 C 320 RS 106
RSV 350 - 1650 MOC 350
Komb.- 0 400 074 079

Sales model
0 400 074 080

supersedes
company Daimler Benz
engine OM 616
46 kW

1 - 3 - 4 - 2 = 0 - 90 - 180 - 270 ± 0,50 (0,75)
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

1,70 - 1,80
Port closing at prestroke (1,65 - 1,85) mm (from BDC) RW = 20,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
1630	13,3 ± 0,1	4,0 - 4,1	0,2 (0,3)			
350	6,1 - 6,3	0,6 - 0,8	0,1 (0,15)			
750	13,3 ± 0,1		0,25 (0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3- 1,0				ca. 40	350	6,2		
ca. 75	12,4 = 1670-1680									
2a	4,0 = 1770-1790									
	0,3-1,7=2000									

The numbers denote the sequence of the tests* Adjustment angle = 0° = horizontal control lever position.

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limiter		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40 °C (104 °F)		Note changed to rev/min							
rev/min	cm ³ /1000 strokes	3		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1630	40,0 - 41,0 (39,0 - 42,0)	1670-1680 *	750	36,5 - 38,5 (35,5 - 39,5)		100	RW = 20,3 min. 53,0		
						350	6,0 - 8,0 (5,5 - 9,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

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K23

K23

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 2,4 K 2

2. Edition

En

Test ISO 4193

PES 4 M 55 C 320 RS 106 RSV 400-2200 MOC 351

Komb. 0 400 074 082

0 400 074 081

1-3-4-2 = 0-90-180-270 ± 0,50 (0,75)

Sales model

supersedes

company

engine

Daimler-Benz

OM 616

53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 1,70-1,80 \\ (1,65-1,85) \end{matrix}$ mm (from BDC) RW = 20,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
2180	12,9±0,1	4,0-4,1	0,2(0,3)			
400	6,4-6,6	0,6-0,8	0,1(0,15)			
1000	13,4±0,1		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
Loose	800	0,3-1,0				ca. 39	400	6,5	1000	13,4-13,5
									1750	13,1-13,4
*ca. 70°	12,0 = 2240-2250	4,0 = 2370-2390								
②a	0,3-1,7 = 2550									

The numbers denote the sequence of the test* Adjustment angle = 0° = horizontal control lever position.

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40 °C (104 °F)	rev/min 1	cm ³ /1000 strokes 2	Note changed to rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
	2180	40,0-41,0 (39,0-42,0)	2240-2250*	1000	37,0-38,0 (36,0-39,0)	1000	RW = 20,3 min. 53		
						400	6,0-8,0 (5,5-9,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

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K24

K24

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PE 6 A 100 0 320 RS 3008

EP/RSV 300-1150 A1B489DR

supersedes 4.84

PE 8 A 100.. RS 3009

A1C489 DR

company:

M W M

EP/RSV 300-1150 A1B489DR

engine:

D/TD 232 - 6

A1C489 DR

D/TD 232 - 8

RQV 300/550-750 AB 660 R, 871 R

Instructions P. 3

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	7,6 - 8,2	0,4			
	6	3,2 - 4,2				
	12	12,3 - 13,4				
200	9	3,4 - 4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

EP/RSV ... 489DR

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 66	1150	16,0	Without auxiliary spring			ca. 28	300	6,0	See note	
	1200	11,4					100	19 - 21		
	1250	5,8					300	5,7-6,3		
							350	3,5-4,7		
							400	0,6-3,0		
⑤	1230	6,0-9,3					500	0 - 1		
	1280	1,8-4,0								
	1400	0,3-1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to rev/min							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Instructions 4 - 14						100	19,5-21,5 mm R ₀₇		

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

RQV .. 660R, 871R **

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 66	750	14,8-17,8	ca. 34	520	13,7-15,5	ca. 10	250	6,8-8,0		
	770	9,0-14,0		600	8,5-10,0		300	4,5-7,0		
	790	3,5-10,5		650	4,5-7,0		350	3,6-4,0		
	800	0 - 8		720	0		550	1,8-4,0		
	840	0					630	0		
⑤										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full load stop		⑥ Rotational speed limit	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
Instructions 4 - 14					100	15,7-16,3 mm RW		
					300	5,3-5,7 mm RW		
			⑥a					

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
⑤										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full load stop		⑥ Rotational speed limit	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

** Governor ..871R = electromagnetic starting fuel delivery
unlocking (24 volt)
Switch on magnet for max. 15 sec. when testing.

The nameplate described at MWM 1.5 a has recently been extended to 2 speeds and 2 deliveries - in column n = (speed) and Q = (full-load delivery) for more accurate setting in the case of governors with torque control.

The following points apply, deviating from WPP 001/4, Supplement 1, setting the governor and the pump:

(2) Setting according to nameplate n = (speed 1) and Q = (delivery 1); or according to columns 1 and 2

(3) Is contacted until change of control-rod travel, as read under (2), or (with new nameplate) until the 2 delivery is reached at speed 2; or according to columns 4 and 5

(6) Is adjusted according to nameplate n = (speed 1 + 20 rpm) or column 3

For repairs on Fendt tractors on which the new nameplate (with 2 speeds and 2 deliveries) has not yet been introduced, the full-load data apply - ordered according to engine types -

according to the above note

In the case of new replacement pumps from Stuttgart warehouse there is no spring retainer. Send for from MWM according to old nameplate.

Cam sequence and angular spacing:

PE 6 A:

1 - 6 - 3 - 2 - 5 - 4
0 -90 -120-210-240-330°

PE 8 A:

1 - 8 - 5 - 4 - 7 - 2 - 3 - 6
0 -30 -90 -120-180-210-270-300°

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 165 PS / 2500 min⁻¹

1250 81,0-83,0 1270 750 82,5 - 85,5

B' 162 PS / 2500 min⁻¹

1250 81,0-83,0 1270 750 82,5 - 85,5

B 162 PS / 2500 min⁻¹

1250 81,0-83,0 1270

F 160 PS / 2300 min⁻¹

1150 80,0-82,0 1170 750 82,5 - 85,5

B' 155 PS / 2300 min⁻¹

1150 80,0-82,0 1170 750 82,5 - 85,5

B 155 PS / 2300 min⁻¹

1150 80,0-82,0 1170

A 141 PS / 2300 min⁻¹

1185 76,0-78,0 1200

B' 144 PS / 2100 min⁻¹

1050 77,0-79,0 1060 750 82,5 - 85,5

B 144 PS / 2100 min⁻¹

1050 77,0-79,0 1060

A 131 PS / 2100 min⁻¹

1080 73,0-75,0 1090

F 144 PS / 2000 min⁻¹

1000 77,0-79,0 1010 750 82,5 - 85,5

B' 138 PS / 2000 min⁻¹

1000 77,0-79,0 1010 750 82,5 - 85,5

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 138 PS / 2000 min⁻¹

1000 77,0-79,0 1010

A 126 PS / 2000 min⁻¹

1030 73,0-75,0 1040

B 127 PS / 1800 min⁻¹

900 78,0-80,0 910

A' 115 PS / 1800 min⁻¹

900 78,0-80,0 910

A 115 PS / 1800 min⁻¹

930 74,0-76,0 940

B 108 PS / 1500 min⁻¹

750 80,0-82,0 760

A' 98 PS / 1500 min⁻¹

750 80,0-82,0 760

A 98 PS / 1500 min⁻¹

775 76,0-78,0 785

B 162 PS / 2300 min⁻¹

1150 83,0-85,0 1170

Special output

D 143 PS / 1800 min⁻¹

900 89,0-91,0 910

Emergency power output

C 130 PS / 1800 min⁻¹

900 89,0-91,0 910

Emergency power output

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

D 120 PS / 1500 min⁻¹

750 90,0-92,0 760
Emergency power output

C 109 PS / 1500 min⁻¹

750 90,0-92,0 760
Emergency power output

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 220 PS / 2500 min⁻¹

1250 81,0-83,0 1270 750 82,5 - 85,5

B'216 PS / 2500 min⁻¹

1250 81,0-83,0 1270 750 82,5 - 85,5

B 216 PS / 2500 min⁻¹

1250 81,0-83,0 1270

F 213 PS / 2300 min⁻¹

1150 80,0-82,0 1170 750 82,5 - 85,5

B'206 PS / 2300 min⁻¹

1150 80,0-82,0 1170 750 82,5 - 85,5

B 206 PS / 2300 min⁻¹

1150 80,0-82,0 1170

A 188 PS / 2300 min⁻¹

1185 76,0-78,0 1200

B'192 PS / 2100 min⁻¹

1050 77,0-79,0 1060 750 82,5-85,5

B 192 PS / 2100 min⁻¹

1050 77,0-79,0 1060

A 175 PS / 2100 min⁻¹

1080 73,0-75,0 1090

F 192 PS / 2000 min⁻¹

1030 77,0-79,0 1040 750 82,5 - 85,5

B'184 PS / 2000 min⁻¹

1000 77,0-79,0 1010 750 82,5 - 85,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 184 PS / 2000 min⁻¹

1000 77,0-79,0 1010

A 168 PS / 2000 min⁻¹

1000 73,0-75,0 1010

B 169 PS / 1800 min⁻¹

930 78,0-80,0 940

A 154 PS / 1800 min⁻¹

900 78,0-80,0 910

A 154 PS / 1800 min⁻¹

900 74,0-76,0 910

B 144 PS / 1500 min⁻¹

775 80,0-82,0 785

A 130 PS / 1500 min⁻¹

750 80,0-82,0 760

A 130 PS / 1500 min⁻¹

750 76,0-78,0 760

B 216 PS / 2300 min⁻¹1150 83,0-85,0 1170
Special outputD 190 PS / 1800 min⁻¹900 89,0-91,0 910
Emergency power outputC 173 PS / 1800 min⁻¹900 89,0-91,0 910
Emergency power output

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

D 160 PS / 1500 min⁻¹750 90,0-92,0 760
Emergency power outputC 145 PS / 1500 min⁻¹750 90,0-92,0 760
Emergency power output

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col. 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 210 PS / 2300 min⁻¹

1150 105,0-107,0 1170 800 104,5-107,5

B' 207 PS / 2300 min⁻¹

1150 105,0-107,0 1170 800 104,5-107,5

B 207 PS / 2300 min⁻¹

1150 105,0-107,0 1170

A 188 PS / 2300 min⁻¹

1185 101,0-103,0 1200

B' 192 PS / 2100 min⁻¹

1050 103,0-105,0 1060 800 105,5-107,5

B 192 PS / 2100 min⁻¹

1050 103,0-105,0 1060

A 174 PS / 2100 min⁻¹

1080 99,0-101,0 1090

F 192 PS / 2000 min⁻¹

1000 102,0-104,0 1010 800 104,5-107,5

B' 184 PS / 2000 min⁻¹

1000 102,0-104,0 1010 800 104,5-107,5

B 184 PS / 2000 min⁻¹

1000 102,0-104,0 1010

A 167 PS / 2000 min⁻¹

1030 98,0-100,0 1040

B 168 PS / 1800 min⁻¹

900 101,0-103,0 910

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

A' 153 PS / 1800 min⁻¹

900 101,0-103,0 910

A 153 PS / 1800 min⁻¹

930 97,0-99,0 940

B 142 PS / 1500 min⁻¹

750 100,0-102,0 760

A' 129 PS / 1500 min⁻¹

750 100,0-102,0 760

A 129 PS / 1500 min⁻¹

775 96,0-98,0 785

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 292 PS / 2500 min⁻¹

1250 102,0-104,0 1270 800 100,5-103,5

B'292 PS / 2500 min⁻¹

1250 102,0-104,0 1270 800 100,5-103,5

B 292 PS / 2500 min⁻¹

1250 102,0-104,0 1270

F 280 PS / 2300 min⁻¹

1150 100,0-102,0 1170 800 100,5-103,5

B'275 PS / 2300 min⁻¹

1150 100,0-102,0 1170 800 100,5-103,5

B 275 PS / 2300 min⁻¹

1150 100,0-102,0 1170

A 250 PS / 2300 min⁻¹

1185 96,0-98,0 1200

B'255 PS / 2100 min⁻¹

1050 99,0-101,0 1060 800 100,5-103,5

B 255 PS / 2100 min⁻¹

1050 99,0-101,0 1060

A 232 PS / 2100 min⁻¹

1080 95,0-97,0 1060

F 256 PS / 2100 min⁻¹

1000 99,0-101,0 1010 800 100,5-103,5

B'245 PS / 2000 min⁻¹

1000 99,0-101,0 1010 800 100,5-103,5

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col. 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 245 PS / 2000 min⁻¹

1000 99,0-101,0 1010

A 222 PS / 2000 min⁻¹

1030 95,0-97,0 1040

B 224 PS / 1800 min⁻¹

900 99,0-101,0 910

A' 203 PS / 1800 min⁻¹

900 99,0-101,0 910

A 203 PS / 1800 min⁻¹

930 95,0-97,0 940

B 189 PS / 1500 min⁻¹

750 98,0-100,0 760

A' 172 PS / 1500 min⁻¹

750 98,0-100,0 760

A 172 PS / 1500 min⁻¹

750 94,0-96,0 760

D 250 PS / 1800 min⁻¹

900 111,0-113,0 910

Emergency power output

C 227 PS / 1800 min⁻¹

900 111,0-113,0 910

Emergency power output

D 210 PS / 1500 min⁻¹

750 111,0-113,0 760

Emergency power output

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

C 191 PS / 1500 min⁻¹

750 111,0-113,0

760

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col. 2

En

L141

L14

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 2,4 u

1. Edition

En

PES 4 M 55 C 32U RS 106-1

RSV 350-1650 MOC 350

Komb. 0 400 074 083

Sales model

0 400 074 084

1-3-4-2=0-90-180-270 \pm 0,50 (0,75)

supersedes

company Daimler Benz

engine OM 616

46 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,65-1,85) mm (from BDO) RW=20,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
1630	12,5+0,1	3,7-3,8	0,2(0,3)			
350	6,1-6,3	0,6-0,8	0,1(0,15)			
750	12,4+0,1		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca. 40	350	6,2		
* Ca. 76	11,5	1670-1680								
	4,0	1745-1775								
2a	0,3-1,7	2000								

The numbers denote the sequence of the test. Adjustment angle = 0° = horizontal control lever position.

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery		5 Idle stop	
Test oil temp 40 C (104 F)		Note							
rev/min	cm ³ /1000 strokes	changed to rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1630	37,0-38,0 (36,0-39,0)	1670-1680*	750	33,5-34,5 (32,5-35,5)	100	RW=20,3 min.53,0			

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 2,4 u1

1. Edition

En

PES 4 M 55 C 320 RS 106-1

RSV 400-2200 MOC 351

Komb. 0 400 074 086

Sales model 0 400 074 085

1-3-4-2=0-90-180-270 ± 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes _

company Daimler Benz

engine OM 616

53 kW

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80
(1,65-1,85)

mm (from BDC) RW 20,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
2180	11,9+0,1	3,55-3,65	0,2(0,3)			
400	6,4-6,6	0,6-0,8	0,1(1,5)			
1550	12,5+0,1		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 40	400	6,5	1550	12,5+0,1
									1750	12,1+0,2
									1950	11,9+0,2
ca. 72	11,0 = 2240-2250 4,0 = 2355-2385									
2a	0,3-1,7 = 2550									

The numbers denote the sequence of the tests* Adjustment angle = 0° horizontal control lever position.

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
2180	35,5-36,5 (34,5-37,5)	2240-2250*	1550	36,0-37,0 (35,0-38,0)	100	RW=20,3 min. 53,0			
					400	6,0-8,0 (5,5-9,0)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 MB 3,0 V

2. Edition

En

PES 5 M 55 C 320 RS 109-1 RSV 350-1650 MOC 350-1
Komb.-Nr. 0 400 075 007
0 400 075 006 Sales model

supersedes 1.84
company Daimler-Benz
OM 617
engine 57 kW

1- 2- 4 - 5 - 3
0-72-144-216-288 $\pm 0,50$ (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30
(2,15-2,35) mm (from BDC) RW = 20,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1630	12,5+0,1	3,7-3,8	0,2(0,3)			
350	6,2-6,5	0,6-0,8	0,1(0,15)			
1150	13,2+0,1		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca. 40	350	6,2-6,5	1150	13,2-13,3
									1400	12,6-12,8
									1630	12,5-12,6
*ca. 75°	1670-1680 = 11,6					* Set idle auxiliary spring at 2,0 mm.				
2a	1770-1800 = 4,0									
	2000 = 0,3-1,7									

The numbers denote the sequence of the tests

* Adjustment angle = 0° = horizontal control lever position

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40 C (104 F)		Note changed to 1 rev/min							
rev/min	cm ³ /1000 strokes	3		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1630	37,0-38,0 (36,0-39,0)	1670-1680*	750	36,5-37,5 (35,5-38,5)	100	min. 53,0			
					350	6,0-8,0 (5,5-9,0)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.84

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L17

L17

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 VOL 6,0 t

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1004

RSV 325-1050 MW 4/308-1

0 403 476 020

supersedes

company Volvo

engine TD 60 D

112 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,80-2,90$
($2,75-2,95$) mm (from BDC) bei RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1020	10,8+0,1	8,65-8,85	0,35(0,6)			
325	4,9-5,0	1,0-1,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 26	325	4,3	350	11,2-11,3
							325	4,9-5,0	500	10,8-10,9
							450-510	2,0	1050	10,8-10,9
ca. 63	9,8	1090-1100								
②a	4,0	1130-1160								
	0,3-1,7	1300								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ ④a Idle stop	
Test oil temp 40 °C (104 °F)		Note changed to							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1020	86,5-88,5 (84,5-90,5)	1090-1100*			325	10,0-14,0 (7,5-16,5)	325	4,9-5,0	
					100	min. 140 (137)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

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7.84

L18

L 48

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 8,1 c 2

5. Edition

En

Testoil-ISO 4113

PES 6 MW 100/720 RS 1012
RQV 300-1100 MW 19
Komb. 0 403 446 114

supersedes 5.82
Fiat
company
engine 8365.25.500

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,90-3,00$ mm (from BDC) RW = $9,0 - 12,0$ mm
($2,85-3,05$)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,5 ^{+0,1}	9,6 - 9,8	0,35(0,6)			
300	6,3-6,4	1,15 - 1,55	0,35(0,55)			
700	12,4-12,5		0,5 (0,7)			
500	11,2-11,3		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1100 1300	15,2-17,8 0 - 1,0				ca.14	100 300 385-445 = 2,0	min.8,0 6,3-6,4		
ca.49	10,5 4,0	1140-1150 1185-1215				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1100	0,7 bar 96,0 - 98,0 (94,0 - 100,0)	1140-1150*	LDA 700	0,7 bar 101,0-105,0 (99,0-107,0)	100 300	min. 160,0 11,5-15,5 (9,0-18,0)	700 1000	12,4±0,1 11,5±0,1
			LDA 500	0 bar 75,0- 77,0 (73,0- 78,0)	100-230 (80-250)			

Checking values in brackets

* 1 mm less control rod travel than col 2
8.84

L19

L43

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D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

FIA 8,1 c 2

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1012 with MW 19	0,5	0,3 0,2 0	12,4 - 12,5 12,1 - 12,2 11,5 - 11,7 11,2 - 11,3

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8k2

7. Edition

En

supersedes 10.83

company: RVI

engine: MIDR06.02-12

125 kW (170 PS)

PES 6 MW 100/320 RS 1016

RQV 300 - 1300 MW 25-1

Komb. 0 403 446 122

1 - 5 - 3 - 6 - 2 - 4 je 60°

* Start-of-delivery mark 8° after start of delivery with control-rod travel 10.5 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke (2,95-3,15) mm (from BDC) RW 9,0-12,0 mm
 3,00-3,10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,1+0,1	9,1-9,3	0,35(0,6)			
300	6,2-6,3	0,95-1,35	0,35(0,55)			
900	11,1+0,1		0,5(0,7)			
500	9,8-9,9					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm/rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1400 1650	15,2-17,8 0-1,0				ca. 12	200 300	max. 4,8 6,2-6,3		
ca. 62	10,1 4,0	1440-1450 1550-1580				3a	490-550 = 2,0			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed 4a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1400	0,5 bar 91,0-93,0 (89,0-95,0)	1440-1450*	LDA 900	0,5 bar 88,5-92,5 (86,5-94,5)	100	94,0-104,0 (91,0-107,0)		
			LDA 500	0 bar 59,0-61,0 (57,0-63,0)	100-230 (80-250)			

Checking values in brackets

* 1 mm less control rod travel than col 2

8.84

Testoil-ISO 4713

BOSCH

 Geschäftsbereich KM Kundendienst Kfz-Ausrüstung
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D. Adjustment Test for Manifold Pressure Compensator

Test at n 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure bar	Gauge pressure bar	mm (1)	
RS 1016 +	0,25		10,8 - 10,9	
MW 25-1		0,5	11,1 - 11,2	
		0,2	10,3 - 10,4	
		0	10,1 - 10,2	

Notes

(1) when n

rev/min and
gauge pressure

bar (= maximum full load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 4,5 f

1. Edition

En

Testo-ISO 4:13

PES 4 MW 100/320 RS 1102
0 403 444 106

RQV 300-1100 MW 39-4

supersedes

compar Volvo

engine D 45

82,5 kW

1-3 - 4 - 2
0-90-180-270 \pm 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,80-2,90}{(2,75-2,95)}$ mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,2+0,1	9,4-9,6	0,35 (0,6)			
300	4,9-5,0	1,3-1,7	0,35 (0,55)			
1000	10,2+0,1		0,55 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200 1350	15,2-17,8 0 - 1,0				ca. 12	300 100	4,9-5,0 min. 8,1		
ca. 48	9,2 4,0	1140-1150 1190-1220				③a	320-650			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
700	94,0-96,0 (92,0-98,0)	1140-1150*	1000	96,5-99,5 (95,0-101,0)	100	19,0-21,0 mm RW 130,0-140,0 127,0-143,0		
					300	13,0-17,0 (10,5-19,5)		
					100-220	(80-250)		

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

L23

L23

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